DEVELOPING A BENCHMARKING METHODOLOGY FOR THE NIGERIAN TRANSPORT SECTOR

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ABSTRACT

The Nigerian transport system has been facing challenges due to the imbalance in the transport system. Goods and passenger movements in Nigeria are performed mainly by road, with the railway and inland waterways playing significant, but less important roles. The dominance of road transport in Nigeria has placed obstacles in the way of economic development and has reduced the quality of life for citizens as the large number of vehicles required to meet demand causes congestion and parking issues and, in the main, citizens suffer with high levels of local associated pollution and low levels of security and safety. Decision-makers need support to make the right decisions. Precise and relevant information are required to give a clear overall view of the issues at stake and to monitor the benefits of implementing efficient public transport systems.

This research has identified the need to develop an organized, effective and efficient transport system in Nigeria. Key Performance indicators were identified and developed for the Nigerian transport sector, which were used for the survey. A transport users' survey was carried out in four cities (Lagos, Warri, Ughelli and Benin) in Nigeria, with 474 participants in total comprising both male and female between the age ranges of 20-70, the results of the survey was analysed and Lagos RII values were the lowest among the four cities falling below 0.60. However there is a similar case of low RII values between the four Cities, which was Security during evening/night and Accessibility during evening/night. The UK survey results was also analysed and the RII values were above 0.80 indicating a very high performance of the UK transport system. Data on highway robbery incidents in Nigeria was also collected and analysed and it was found out that there will be a continuous increase in highway robbery incidents in Nigeria if adequate security measures are not put in place. A Strategic Benchmarking was done between Nigeria and United Kingdom because the United Kingdom is a developed country with a more organized transport system compared to Nigeria hence it was seen as a best practice. Also the spearman's rank correlation coefficient was done between the United Kingdom and Nigeria survey results and there was a perfect positive correlation (r_s =1) for Motor parks/Bus stops/Stations and very strong positive correlation (r_s = 0.9) for Vehicles. In other words Nigeria can adopt the United Kingdom public transport strategy into its transport system because it will have a very positive impact on the development of the Nigerian transport sector. Therefore, having identified the challenges of the Nigerian transport sector and possible solutions, a Strategic Action Plan has been proposed for the Nigerian transport sector to: assist policy makers in making decisions, assist security personnel in taking proactive measures against transport insecurity, enhance the overall performance of the transport system.

DEDICATION

I dedicate this thesis to the Almighty God who granted me the wisdom, favour, insight and enablement to embark upon and complete this PhD.

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CHAPTER 1 – BACKGROUND OF RESEARCH

1.0. INTRODUCTION

Transportation can be defined as the movement of people, animals and goods from one location to another. It is the main mover and a non-separable part of any society. Transportation plays an important/key role in the political, economic and social development of any society with respect to rural and urban societies (Aderamo, 2012d; FGN, 2010). It also constitutes the main avenue through which different parts of the society are linked together, thereby facilitating access to jobs, education, markets, leisure and other services (Aderamo and Magaji, 2010; Damian and Tony, 2009). The commonly used modes of transport are the Road, Air, Water and Rail which are mainly for freight and passenger transport.

1.1. ROLES OF TRANSPORTATION IN THE SOCIETY

The roles of transportation in the society can be classified under economic, social, political and environmental roles.

1.1.1. Economic Role of Transportation

Economics involves production, distribution and consumption of goods and services. People depend upon the natural resources to satisfy the needs of life but due to non-uniform surface of earth and due to difference in local resources, there is a lot of difference in standard of living in different societies. So there is an immense requirement of transport of resources from one particular society to another. These resources can range from material things to knowledge and skills like movement of doctors and technicians to the places where they are needed (Button *et al.*, 2004; Jean-Paul *et al.*, 2009).

1.1.2. Social Role of Transportation

Transportation has always played an important role in influencing the formation of urban societies. Although other facilities like availability of food and water played a major role, the contribution of transportation can be seen clearly from the formation, size and pattern, and the development of societies, especially urban centres. From the beginning of civilization, man has been living in settlements, which existed near banks of major river junctions, a port, or an intersection of trade routes (Button *et al.*, 2004; Jean-Paul *et al.*, 2009).

The initial settlements were relatively small developments but with due course of time, they grew in population and developed into big cities and major trade centres. The size of settlements is not only limited by the size of the area by which the settlement can obtain food and other necessities, but also by considerations of personal travels especially the journey to and from work. The increased speed of transport and reduction in the cost of transport has resulted in variety of spatial patterns (Button *et al.*, 2004; Jean-Paul *et al.*, 2009).

When the cities grow beyond normal walking distance, then transportation technology plays a role in the formation of the city. For example, many cities in the plains developed as a circular city with radial routes, whereas the cities beside a river developed linearly. The development of automobiles and other factors like increase in personal income, and construction of paved road network, the settlements were transformed into urban centres of intense travel activity (Button *et al.*, 2004; Jean-Paul *et al.*, 2009).

1.1.3. Political Role of Transportation

The world is divided into numerous political units, which are formed for mutual protection, economic advantages and development of common culture. Transportation plays an important role in the functioning of such political units. The government of an area must be able to send/get information to/about its people. It may include laws to be followed, security and other needful information needed to generate awareness. An efficient administration of a country largely depends on how effectively government could communicate these information to all the country. However, with the advent of communications, its importance is slightly reduced (Button *et al.*, 2004; Jean-Paul *et al.*, 2009).

There are political choices in transport, which may be classified as communication, military movement, travel of persons and movement of freight. The primary function of transportation is the transfer of messages and information. It is also needed for rapid movement of troops in case of emergency and finally movement of persons and goods. The political decision of construction and maintenance of roads has resulted in the development of transportation system (Button *et al.*, 2004; Jean-Paul *et al.*, 2009).

1.1.4. Environmental Role of Transportation

The negative effects of transportation are more dominating than its useful aspects as far as transportation is concerned. There are numerous categories into which the environmental effects have been categorized. They are explained in the following sections:

1.1.4.1. Safety

Growth of transportation has a very unfortunate impact on the society in terms of accidents. Worldwide death and injuries from road accidents have reached epidemic proportions. Thousands of people have lost their lives in Nigeria through auto related accidents with more sustaining

injuries which may be serious or minor (Gbadamosi, 2006; Oluwadiya *et al.*, 2009).

Significant reduction to accident rate is achieved in the developing countries by improved road designed maintenance, improved vehicle design, driver education, and law enforcements. However in the developing nations like Nigeria, the rapid growth of personalized vehicles and poor infrastructure, road design, and law enforcement has resulted in growing accident rate (Daniel, 2011).

1.1.4.2. Air Pollution

All transport modes consume energy and the most common source of energy is from the burning of fossil fuels like coal, petrol, diesel, etc. The relation between air pollution and respiratory disease has been demonstrated by various studies and the detrimental effects on the planet earth were widely recognized few years ago. The combustion of the fuels releases several contaminants into the atmosphere, including carbon monoxide, hydrocarbons, oxides of nitrogen, and other particulate matter. Hydrocarbons are the result of incomplete combustion of fuels. Particulate matters are minute solid or liquid particles that are suspended in the atmosphere. They include aerosols, smoke, and dust particles. These air pollutants once emitted into the atmosphere undergo mixing and disperse into the surroundings (Elmar *et al.*, 2010; Aderamo, 2012).

1.1.4.3. Noise Pollution

Sound is acoustical energy released into the atmosphere by vibrating or moving bodies whereas noise is unwanted sound produced. Transportation is a major contributor of noise pollution, especially in urban areas. Noise is generated during both construction and operation. During construction, operation of large equipment causes considerable noise in the neighbourhood. During the operation, noise is generated from

the engine and exhaust systems of vehicles, aerodynamic friction, and the interaction between the vehicle and the support system (road-tyre, rail-wheel). Extended exposure to excessive sound has been shown to produce physical and psychological damage. Further, because of its annoyance and disturbance, noise adds to mental stress and fatigue (Carlos *et al.*, 2000; Aderamo, 2012).

1.1.4.4. Energy Consumption

Energy consumed in the course of operating transportation system is quite enormous. The Transport sector consumes more than half of the petroleum products and is creating a lot of concern because of the cascading effects it has on many factors of the Nigerian society, especially in the price escalation of essential commodities (Aderamo, 2012).

1.1.4.5. Land Use and Aesthetics

Most cities use almost fifty per cent of its land in transport facilities. Increased travel requirement also require additional land for transport facilities. A good transportation system takes considerable amount of land from the society.

Aesthetics of a region is also affected by transportation. A Road network in quiet countryside is visual intrusion. Similarly, the transportation facilities like fly-overs are again visual intrusion in urban context. The social life and social pattern of a community is severely affected after the introduction of some transportation facilities. Construction of new transportation facilities often requires substantial relocation of residents and employment opportunities (Button *et al.*, 2004, Aderamo, 2012).

Nevertheless while some other countries especially the developed ones, have been able to manage their transport system efficiently in such a way that they have evolved an enduring intermodal transport system and an organized transport system, the reverse seems to be the case for low and medium income countries such as Nigeria (Innocent, 2011; Aderamo, 2012d; Aderamo, 2012e).

The evolution of the modern Transport System in Nigeria began during the colonial period. The networks of Rail, Water and Road that was developed then were built for the exportation of cash crops and the importation of mass produced consumption goods. They were planned in the most economic way possible and later proved inadequate. The post colonial period after the attainment of Independence came with a re-orientation of goals - transportation became an instrument of unification in the country and an important tool for socio-economic development while the exploration and exploitation of petroleum resources also put increasing demands on the transport system (Ogunbodede, 2008; FGN, 2010; FGN, 2011; Innocent, 2011).

In Nigeria, goods and passenger movements are performed mainly by road, with the Railway and Inland Waterways playing insignificant and less important roles. International freight movement is principally by sea while Air Transportation is the main passenger carrier and also accounts for an increasing freight by value (Ogunbodede, 2008; FGN, 2010; FGN, 2011; Innocent, 2011).

Past shortages of resources resulted in the inadequate maintenance of all the transport sub-sectors causing the Government in the past to focus more on rehabilitating the roads, as it remains the major mode of transportation, although the railways are being rehabilitated at the

moment, rail transport is yet to be fully utilized. Presently, the dependence on roads has resulted in a rapid deterioration of the road network, affecting the economy as goods and services are delayed and high transport costs translate to a high cost of goods and services (Ogunbodede, 2008; FGN 2010; FGN, 2011; Innocent 2011; Innocent, 2011).

1.2. THE NIGERIAN ROAD NETWORK DEVELOPMENTS

The history of road network development in Nigeria date back to the period before 1910 when the existing bush paths were developed into motorable routes. It can be traced to 1940, when Lord Luggard attempted the construction of a mule road Linking Zaria and Zungeru both in the Northern state of Nigeria. The road was later extended from Zaria to Sokoto, Katsina and Maiduguri. However, the road linking Ibadan and Oyo constructed in1906 was recorded to be the first motorable road ever constructed in Nigeria (Anyanwu *et al.*, 1997; Ogunbodede, 2008; Olubomehin, 2012).

In 1925, the Central Government of Nigeria set up a Road Board that proposed a skeletal trunk road system to link the major administrative centres in the Country in 1926. These roads were designed as a frame upon which the network of secondary roads could be built thus, enabling the general road system to be considered as a coordinated whole rather than as a jigsaw of small-disjointed sections. The total length of roads maintained by the government rose from 6,160 km to 9,453km (Anyanwu *et al.*, 1997; Ogunbodede, 2008; Olubomehin, 2012).

At independence in 1960, the Nigerian landscape was dotted with a skeletal network of trunk roads as well as secondary and feeders roads

that exhibited the characteristics, which reflected the purpose of their construction. They were narrow and winding, being simply meant to facilitate the evacuation of agricultural produce from the interior to the ports for export in addition to serving as links between scattered settlements thus permitting ease of administration (Ogunbodede, 2008; Olubomehin, 2012).

The various data published by the Federal Office of Statistics in Nigeria, show that as at 1951, out of the total of 44,414km of road in Nigeria, 1,782km were surfaced, though the roads were lacking in standard designs and were single lane with sharp bends and poor drainage system. By 1980, the total length had increased from 44,414km in 1951 to 114,768km, while tarred roads increased in length from 1782km in 1951 to 28,632km in 1980, and earth/gravel road increased from 4,232km in 1951 to 8,613km in 1980. According to the Central Bank of Nigeria (2003) the estimated total road network length in Nigeria was about 200,000km. This stated road network has increased by over 20% since 2003 (Ajator *et al.*, 2016; Elebeke, 2016; Olubomehin, 2012).

1.2.1. EFFECT OF THE POOR STATE OF ROAD TRANSPORT INFRASTRUCTURE AND SERVICES ON ENTERPRENEURSHIP IN NIGERIA

Insufficient and poor road network have contributed in hindering efficient operations of the nation's transportation system. Passengers and motorists are trapped in traffic gridlocks in cities around the country; leaving road users fatigued and frustrated which results in declining productivity even as man-hours are lost on a daily basis. According to the draft national policy on transport, a well functioning transport system among others stimulate national development and enhance quality of life for all; allow markets to operate by enabling the seamless movement of goods and

people; provides vital links between spatially separated facilities and enables social contact and interaction. It also provides access to employment, health, education and services; alleviates regional inequality, fosters national integration; increases access to markets and links local, regional, national and international markets. More importantly, it promotes entrepreneurship development by increasing access to labor and physical resources, thus paving the way for the realization of a country's comparative advantages (Ajator *et al.*, 2016; Elebeke, 2016; Siyan *et al.*, 2015; Igwe *et al.*, 2013, Dike *et al.*, 2012, Olomola, 2003).

Consequently, this has not been the case in Nigeria as the people are yet to reap the benefit of an efficient transport system due to its precarious state. According to the draft national transport policy, "the Nigeria transport system functions in a crisis situation". More worrisome is the poor funding the sector has received over the years. The enormity of the challenges facing the transportation sector is daunting. With weak infrastructure, Government has a huge role to play if our transport sector will ever be efficient. Some stakeholders have blamed poor planning especially at the grassroots for the poor transport sector (Ajator *et al*, 2016; Elebeke, 2016; Siyan *et al.*, 2015; Igwe *et al.*, 2013, Dike *et al.*, 2012, Olomola, 2003).

Aside policy inconsistencies, haphazard planning and implementation have largely thwarted efforts at ensuring adequate transport means for the populace. We should have no business importing tricycles in the guise to ease transport problems if the above anomalies were corrected. According to estimates, transportation/haulage cost increases the cost of doing business by about 40 percent. This cost is borne through

servicing/maintenance of trucks, high insurance premium, protection fees to security agencies among others. This has no doubt increased the cost of doing business in the country and reduces competitiveness of our products. Demand for transport services far outstrips supply which puts a strain on existing facilities. Much as solution to the transport crisis is being sourced, the structure of responsibility for road network across the country is skewed against government at the lower levels especially local councils viz-a-viz revenue received. Local governments are responsible for intra-urban and rural feeder roads, which accounts for 60 percent of existing road network, while state governments are responsible for intra-state highways and the federal government takes care of national highways which is just 17 percent of existing road network. Being the most effective means of transport in the country, experts say the current structure of responsibility/maintenance of roads is not sustainable for entrepreneurship development (Ajator *et al.*, 2016; Elebeke, 2016; Siyan *et al.*, 2015; Igwe *et al.*, 2013, Dike *et al.*, 2012, Olomola, 2003).

1.2.2. THE STATE OF ROAD TRANSPORT INFRASTRUCTURE AND ITS EFFECT ON THE NIGERIAN ECONOMY

The major road transport infrastructure in Nigeria consists of 32,000 km of Federal highways including seven major bridges across the Niger and Benue Rivers, the Lagos ring road, the third mainland axial bridge; 30,500 km of state roads; and 130,000 km of local roads (Buhari, 2000). Buhari stated further that as at June 1996, only 50% of the Federal roads and 20% of the State roads were in reasonably good condition. Only an estimated 5% of the local rural roads were freely motorable. The rehabilitation programme carried out by the PTF in the years 1996 to 1999 covered selected portions of the Federal roads totaling about 12,000 km, along with township roads in about 18 selected cities. Even this

programme however has now lost its steam. Meanwhile overuse and lack of maintenance are further eroding the quality of the rest of the Federal highway network (Ajator *et al.*, 2016; Elebeke, 2016; Siyan *et al.*, 2015).

A nation-wide survey was conducted by the Central Bank of Nigeria (CBN) on the state of highways in the country in December 2002. The survey revealed that the road network, as at December 2002, was estimated at 194,000 kilometers. It was also shown that most of the roads were in a bad condition, especially those in the South Eastern and North Western parts of the country. The pattern is generally the same for the roads in the other parts of the country. Some of the roads, constructed over 30 years ago, had not been rehabilitated even once, resulting in major cracks (longitudinal and transverse), depressions, broken down bridges and numerous potholes that make road transport slow and unsafe. The survey also shows that the state of Nigerian roads had remained poor for a number of reasons. Such reasons include faulty designs, lack of drainage and very thin coatings that are easily washed away; excessive use of the road network, given the underdeveloped nature of waterways and railways which could serve as alternative means of transport; absence of an articulated road programme, and inadequate funding for road maintenance (Ajator *et al.*, 2016; Elebeke, 2016; CBN, 2002).

According to Olomola (2003), inadequate provision of transport infrastructure and services provide a basis for explaining the incidence of poverty across various Nigerian communities in both urban and rural areas. The categories of transport problems that can be identified are: bad roads, fuel problem (high fuel price, shortage of fuel supply and consequential high transport cost), traffic congestion (long waiting time, bad driving habits, hold-ups), inadequate high passenger capacity/mass

transit vehicles and overloading, high cost and shortage of spare parts, poor vehicle maintenance and old vehicles. It is clearly established that inadequate transport facilities and services as well as the constraints imposed on the mobility and accessibility of people to facilities such as markets, hospitals and water sources have grave implications on deepening poverty levels. Thus, there is need for urgent policy measures to address the prevailing travel and transport problems (Ajator *et al.*, 2016; Elebeke, 2016; Siyan *et al.*, 2015; Olamigoke and Adebayo, 2013).

1.3. RESEARCH QUESTIONS

To meet the challenges identified in the previous sections, there is the need to establish the research questions that needs to be answered in this research. These questions are as follows:

1. What are the Key Performance Indicators (KPIs) that can be used to manage the performance of the Nigerian transport sector?
2. Can performance-benchmarking techniques be applied in this sector, taking on-board the National prevailing conditions that exist in Nigeria?
3. What are the challenges with respect to developing a benchmarking methodology for the Nigerian transport sector?
4. What are the steps inherent in a benchmarking exercise and how can it be applied to the Nigerian transport sector?
5. What are the techniques and methods for developing a benchmarking methodology that will be relevant to sectoral performance improvement and policymaking in Nigeria?

1.4. RESEARCH AIM AND OBJECTIVES

The aim of this research is to develop a performance enhancement tool using the benchmarking technique to assist in the development of an effective and efficient transport system in Nigeria.

While the specific objectives are to:

1. Develop and establish Key Performance Indicators (KPIs) that can be used to manage the performance of the Nigerian transport sector.
2. Analyse the National prevailing conditions existing in Nigeria and the influence it will have on the transport sector benchmarking.
3. Study and critically examine the challenges facing the Nigerian transport sector with respect to developing a benchmarking methodology.
4. Develop a benchmarking model (for the benchmarking exercise) that will be applicable to the Nigerian transport sector.
5. Develop a benchmarking methodology that will serve as a tool for the overall and continuous improvement of the Nigerian transport sector performance and policymaking.

1.5. THESIS STRUCTURE

This thesis consists of seven chapters.

Chapter 1 presents a background to the research including the aim, research questions and objectives.

Chapter 2 presents a general overview of the Nigerian transport sector, which comprises of Road, Rail, Air and Water transport sub-sectors and challenges facing the transport sector.

Chapter 3 presents an overview to Key Performance Indicators (KPIs) and the Benchmarking Technique.

Chapter 4 presents the research philosophy, approach, strategy, data collection methods, ethical issues and the benchmarking concept applied in this research.

Chapter 5 analysed and discussed the data collected, performance measurement and benchmarking carried out.

Chapter 6 presents the proposed strategic action plan and validation process.

Chapter 7 summarises the overall findings of the research. The chapter presents the research outcomes including the achievement of the research questions. Subsequently, the chapter provides the contributions made by the research. The limitations of the research are also presented and finally some areas for further research were identified.

SUMMARY

This chapter covers the background of the research and has presented the research aim, which is aligned with the research title. The chapter has also put forward the research questions and has reviewed literature that provides a background to the research. This leads to more literature review solidifying the need for this research, which is presented in the next chapter.

CHAPTER 2 – LITERATURE REVIEW

2.0. INTRODUCTION

This chapter presents a general overview of the Nigerian transport sector, which comprises of Road, Rail, Air and Water transport sub-sectors and challenges facing the transport sector, which lead to the research rationale.

2.1. ROAD TRANSPORT

Road transport is the dominant mode of transportation in Nigeria (Ogunbodede, 2008). Its growth has, however, been encouraged through what is relatively a massive investment program on roads compared to investment in railways and inland waterways. It can therefore be argued that the road sector has taken advantage of the government's relative neglect of the other modes of transport to gain a competitive edge in the market (Oladipo, 2012).

As a result of the predominance of road transport, Nigeria's transport system is clearly imbalanced. Over 90 per cent of internal goods and passengers are moved by road. Current transport operations are characterized by large-scale movements of goods and passengers that could have been moved more cost effectively by other modes, such as railways and inland waterways. The predominance of truck transportation accounts for the excessive damage of the road infrastructure and the attendant cost imposition on the economy (Ogunbodede, 2008; Oladipo, 2012; Aderamo, 2012a).

Other notable challenges associated with the predominance of road transport in Nigeria include:

- Misallocation of bulk traffic, which could have been carried by other modes such as rail and inland waterways.
- Low safety levels and poor service quality provision.
- Lack of regulation of the industry
- Rapid increase of enforcement agencies.

(Innocent, 2011).

2.1.1. SAFETY ASPECT OF ROAD TRANSPORT

The problem of transportation safety is of great magnitude encompassing all modes of transportation, all economic levels, and all transport purposes. In terms of fatalities, injuries and number of crashes, the dominant mode of transportation in Nigeria is the roadway (Aworemi *et al.*, 2010). Growth of road transportation and its dominance has got an unfortunate impact on the Nigerian society in terms of road traffic accidents. Thousands of people are losing their lives and many others sustaining minor or severe injuries through road traffic accidents involving freight heavy-duty vehicles and passenger vehicles (Gbadamosi, 2006; Oluwadiya et al, 2009). In particular, urban centres are the most prone to motor traffic accidents because up to seventy-five per cent (75%) of traffic accidents take place in built-up areas of cities. This is due to the underlying factors of undue concentration of vehicles in urban areas, traffic mix and the resultant flow conflicts (Aderamo, 2012a). Presented in table 2.1. is the summary of road traffic accidents in Nigeria 2013-2015.

Table 2.1. Summary of Road Accident in Nigeria showing number of reported cases and persons involved 2013-2015 (NBS, 2015).

	REPORTED CASES				**PERSONS INVOLVED**		
YEAR	FATAL	SERIOUS	MINOR	TOTAL	KILLED	INJURED	TOTAL
2013	12,940	9,074	7,480	29,494	5,539	12,372	17,911
2014	11,665	7,561	6,201	25,427	4,430	12,227	16,657
2015	11,515	7,426	6,013	24,954	5,042	10,257	15,299

2.1.1.1. FACTORS CONTRIBUTING TO ROAD TRAFFIC CRASHES IN NIGERIA

The causes of road traffic crashes are multi-factorial. These factors can be divided broadly into driver factors, vehicle factors, roadway factors and environmental factors. Crashes can be caused by a combination of these factors. Driver factors solely contribute to about 57 per cent of road traffic crashes and 43 per cent either alone or in combination with other factors (Eze, 2012; Atubi, 2012a; Atubi, 2012b; Atubi, 2012e).

2.1.1.1.1. Driver factor

Studies have shown that the major contributing factor to road traffic crashes in Nigeria is the performance of drivers and their attitude to driving code and etiquette (Arosanyin *et al.*, 2012; Ayinla *et al.*, 2012). Driver related issues include sleepiness and fatigue, faulty preparation, ignorance of highway codes or traffic orders, driving under the influence of drugs and/or alcohol and inexperience drivers (Nilambar *et al.*, 2004; Aworemi *et al.*, 2010; Ohakwe *et al.*, 2011; Gungul, 2012; Atubi, 2012b; Atubi, 2012d; Aderamo, 2012e).

2.1.1.1.2. Vehicle factor

Vehicle factors can be divided into vehicle design and vehicle maintenance. A small percentage of crashes are caused by mechanical failure of a vehicle, such as some form of tyre failure, brake failure, or steering failure. Some safety features of vehicles like seatbelts and

airbags are likely to reduce the risk of death and serious injuries. A well-designed and maintained vehicle is less likely to be involved in accidents. If the brakes and tyres are good and the suspension well adjusted, the vehicle is more controllable in an emergency and thus, better equipped to avoid accidents (Aworemi *et al.*, 2010; Eze, 2012).

Experience has it that some of the vehicles used for public transport in Nigeria are being modified including the drivers' work area in order for it to accommodate more passengers and freight and in the process they end up overloading the vehicle, which in most cases contributes to crashes (Atubi, 2012a; Aderamo, 2012b).

2.1.1.1.3. Roadway factor

Road design and maintenance is also a factor that contributes to road traffic accidents. Unfortunately, Nigerian highways are arguably one of the worst and most dangerous in the world (Eze, 2012; Atubi, 2012f). The roadway's conditions like the quality of pavements, shoulders, traffic control devices and intersections, can be a factor in the crash. The numerous potholes on the roads damage vehicles and tires, adding to maintenance and repair costs. (Atubi, 2012a).

Some roads were not built to serve the current high-volume and/or high-speed traffic needs. The safety of these roads is limited by hazards such as sharp curves, poor signs and pavement marking, and lack of medians to separate oncoming traffic. These limitations could present an even greater threat to highway safety because of the expected growth in the nation's population (Aworemi *et al.*, 2010; Okigbo, 2012; Aderamo, 2012b).

2.1.1.1.4. Environmental factor

Some of the well-known factors, which fall under this category, include fog, sunrays, mist and rain. Bad weather on roads can contribute to crashes; for example wet pavement reduces friction and flowing or standing water can cause the vehicle to hydroplane and in the process the driver might lose control of the vehicle (Eze, 2012; Atubi, 2012c).

Many severe crashes have occurred during conditions of smoke or fog, which can greatly reduce visibility. Vehicle travelling at high rate of speed are unable to see the slowing and or stopped vehicles in front of them, which can lead into multiple-vehicle pile-up. Glare can reduce driver's visibility, especially during the hours of sunrise and sunset. During foggy conditions, glare off of streetlights and stoplights can also affect visibility, especially at night. Wind gusts can affect vehicle stability, especially of large trucks and lightweight vehicles such as bicycles and motorcycles (Aworemi *et al.*, 2010, Eze, 2012).

2.1.1.1.5. The Impact Of Road Traffic Crashes On The Nigerian Economy

Road traffic accidents have physical, social, emotional and economic implications. The global economic cost of road traffic accidents was estimated at $518 billion per year in 2003 with $100 billion of that occurring in poor developing countries (Ghee *et al.*, 1997; Atubi, 2012a; Eze, 2012; Nantulya and Reich, 2012; Eshbaugh *et al.*, 2012).

The socioeconomic costs of Road traffic crashes in Nigeria are immense. The direct cost of traffic casualties can perhaps best be understood in terms of the labour lost to the nation's economy. It has been estimated that persons injured in accidents on Nigerian highways and streets no longer participate in the economic mainstream and this amounts to a loss

of labour of millions person-years to the nation. Road Traffic Accidents have significantly retarded Nigeria's socio-economic aspirations and development due to the premature loss of qualified and potential contributing professionals and able-bodied men and women in the labour force (Pratte, 1998; Juillard *et al.*, 2010; Aderamo, 2012a; Aderamo, 2012c, Atubi, 2012f).

2.1.2. SECURITY ASPECT OF ROAD TRANSPORT

The absence of adequate security on highways in the country has left the highways unsafe. Facts show that the rate of crime in public transportation system in Nigeria is on the increase. The country has lost a good number of her productive population to the incidences of crime on board public transportation, which most times result to road crashes. Experience has it that some criminals board vehicles as passengers and along the way rob people of their valuables while some hijack vehicles and drive to nearby bushes to unleash terror on the helpless victims, and in some cases stones, tyre rims and woods are used to stop vehicles. (Okunola, 2009; Omidiji and Ibitoye, 2010; Iweze, 2011).

2.1.3. EMMISSIONS FROM ROAD TRANSPORT

Emissions from road transport vehicles are a major contributor to greenhouse gases and are suspected to be closely linked to respiratory problems and diseases (Julian et al, 2005; Michael, 2000). Developing countries experience higher levels of traffic-related pollution compared to developed countries due to lack of pollution control measures. Motor vehicles create various costs in the process of their being used within urban areas. But these are not costs being paid for by the vehicle user. They are costs borne by others. City inhabitants bear various costs for

living along side the motor car; bronchial patients may suffer through vehicle exhaust fumes; office workers experience the strain of traffic noise and vibration, and society as a whole, both now and in the future, will have to face the consequences of the damage done by motor vehicle to buildings of historic architectural value (Moen 2008).

The overall levels of vehicular related air pollution in Nigeria from all the studies conducted show an increasing trend and indeed significant with possible severe health consequences (Ojo and Awokola, 2012; Moen, 2008; Ojolo *et al*., 2007). The average emission concentration from motor vehicles and motorcycles in Nigeria is on the increase. Study of emission figures showed that the concentration of Total Suspended Particles (TSP); Nitrogen Oxides (NOx); Sulphur dioxide (SO2) and Carbon monoxide (CO) in Lagos and Port Harcourt were above Federal Environmental Protection Agency of Nigeria (FEPA) recommended limit. The TSP concentrations are also high for both cities when compared to WHO (World Health Organization) stipulated standards (Abam and Unachukwu, 2009). Conclusions from these investigations show a growing risk of traffic-related problems in Nigerian cities, which demands for serious air quality measures.

Also the influx of old and fairly used vehicles into the country has not helped the situation in respect of transport-related pollution in the country. Statistics on vehicle registration in Nigeria shows that between 1950 and 1992, the total number of registered vehicles increased from 38,000 to 1.6 million. Abam and Unachukwu (2009) have also reported that data from the Federal Road Safety Commission of Nigeria (FRSC) indicates that between 1999 and 2004, about six million vehicles were registered in Nigeria of which 70% were cars and 30% buses and trucks.

The FRSC also revealed that about 10.6 million registered vehicles are plying the Nigerian roads in 2016 nationwide, which exerts enormous pressure on available roads in the country. (Idowu 2016; Aderamo 2012d; Aderamo, 2012e; Alo, 2008; Daramola and Olubunmi, 2012).

2.1.4. ENERGY CONSUMPTION

Energy consumed in the course of operating road transportation in Nigeria is quite enormous and this is due to it being the dominant mode of transportation in the country. Hence there is a growing concern because of the cascading effects it has on many factors of the Nigerian society, especially in the price escalation of essential commodities (Aderamo, 2012d). Ninety-six per cent (96%) of the total quantity of premium motor spirit (gasoline) consumed and forty per cent (40%) of the automotive gas oil (diesel oil) consumed go to road transportation. Twenty-four per cent of the dual-purpose kerosene consumed goes to aviation, and it is the sole fuel. Ten per cent (10%) of the fuel oil consumed and six per cent (6%) of the automotive gas oil consumed go to water transportation (Jaja, 2010; Badmus *et al.*, 2012).

2.1.5. NOISE POLLUTION

Road transportation is a major contributor of noise pollution, especially in urban areas (Anomohanran, 2008; Omubo-Pepple, 2010; Oloruntoba *et al.*, 2012). Noise is generated by the engine and exhaust systems of vehicles, by aerodynamic friction brakes, horns and by the interaction between the vehicle and the support system. Busy urban roads generate between 70 – 85 decibels (dB) of noise, depending on the characteristic of traffic, speed and type of road surface. The effects of noise on the urban residents are: sleep disturbance, cardiovascular disease, elevated hormone levels, psychological problems and even premature death

(Onuu, 2000; Aderamo, 2012e; Aweda and Jimoh, 2012; Adejobi, 2012). The levels of transport related noise pollution in Nigeria from studies conducted, exceeds the International Financial Agency and Environmental Protection Agency noise thresholds of 55decibel for residential and 70decibels for industrial and commercial areas (Adejobi, 2012).

2.1.6. INVESTMENT ON INFRASTRUCTURE

The importance attached to the road subsector is reflected in the government's allocation to it in the last four decades. The road subsector which accounted for 54% of the federal governments total public sector planned capital investment in transport in the 1962-1968 First National Development Plan, received more than 70% of the allocations during the Third (1975-1980) and Fourth (1981-1985) Development Plan Periods.

Tables 2.2, 2.3 and 2.4 show plan allocations and actual expenditure on transport sector. The fact remains that there has been a disproportionate share between the modes. The greatest allocation was given to the road mode and in terms of the actual expenditure; the results of the huge differentials in the intermodal shares of total transport investment over the four National Development Plan Periods shows that:

1. While railway kilometerage had remained more or less static since 1965 or so, the road network has more than doubled.
2. The railways had been treated with neglect as far as improvement and modernization of its infrastructural facilities are concerned.
3. The nation has been made to pay very high social costs arising from more wasteful use of energy by road transport and huge maintenance cost due to heavy trucks engaged in road haulage over

long distances (Njoku and Ikeji 2012; Oni and Okanlawon, 2012; Effiom and Ubi, 2016).

Table 2.2. Federal allocation to transport sector (1990-1999) Rolling plan periods (Njoku and Ikeji 2012; Oni and Okanlawon, 2012; Effiom and Ubi, 2016).

PLAN PERIOD	ROAD (%)	RAIL (%)	WATER (%)	AIR (%)	TOTAL (MILLIONS)
1990-1992	70.14	14.03	7.24	8.60	2,210,000
1991-1993	52.42	12.95	19.41	15.22	2,695,428
1993-1994	59.65	6.23	15.91	18.21	8,379,446
1994-1995	56.67	1.33	22.92	19.09	6,017,250
1996-1997	40.23	42.16	15.98	1.62	28,491,420
1998-1999	32.03	32.93	26.19	8.86	52,310,162
AVERAGE	51.86	18.27	17.94	11.93	-

Table 2.3. Modal Distribution of Public Planned Capital Investment in Transport (%): 1962-1996 (Njoku and Ikeji 2012; Aderamo, 2012e; Effiom and Ubi, 2016).

PLAN PERIOD	ROAD	RAIL	AIR	WATER
1962-1968	54	14	7	25
1970-1974	59	17	11	13
1975-1980	72	11	8	9
1981-1985	70	15	6	9
1992-1994	50	12	18	20
1994-1996	57	10	19	23

Table 2.4. Allocation to Transport sector during the 2012-2015 Transformation Agenda' s key priority programmes and projects (NPC, 2011).

YEAR	ROAD	RAIL	AIR	WATER
2012	195,300	89,750	35,000	2,750
2013	225,150	98,200	45,850	2,980
2014	259,550	140,300	17,500	3,210
2015	265,000	170,300	14,320	2,860
TOTAL 2012-2015	945,000	498,550	112,670	11,800

2.1.7. INTERMODALITY

Road transport is the dominant mode of transportation in Nigeria (Ogunbodede, 2008). It is responsible for about 90% of both freight and passenger transport. While other public transport modes such as water and rail are under-utilized (Okanlawon, 2007) and as a result of the predominance of road transport, Nigeria's transport system is clearly imbalanced (Innocent, 2011).

2.1.8. ROAD TRANSPORT OPERATION IN NIGERIA

While concentrating on the physical and infrastructural aspects of road transportation, it is also important to look in the way of the operators of the system since the impact of road transporters who are the operators can be felt in every aspect of the Nigerian society.

2.1.8.1. THE ROAD TRANPORT OPERATORS DURING THE COLONIAL PERIOD

Although the first roads in Nigeria were built within the first decade of the twentieth century, road transportation did not become generalized

until the 1920s. The first road transport services in Nigeria were provided by the colonial government and a few private individuals. In southern Nigeria, these included services provided by the railway motor transport and the Egba United Government. The situation was not different in northern Nigeria where the railway motor transport department became established in Zaria in the early 1920s (Olubomehin, 2012; Ogunbodede, 2008).

There, the railway motor service transported hides and skins, cotton and groundnuts from the districts lying to the north and west of the Zaria-Kano line to the railway stations (Oshin, 1990). As the provision of road transport services were then limited more or less to the government, private road transporters were very few indeed. However, things began to change as from the mid-1920s because from that time the colonial government began an aggressive programme of road development having realized that road transportation held the key to the exploitation of the material resources of the interior of Nigeria. Indeed, by 1929/30, the road maintained by the Nigerian government outside township roads was estimated at 3,606 miles compared to 2,000 miles in 1914 (Ekundare, 1960). The expansion of road infrastructure brought more people into the road transport business. Although the road transporters did not, as at this time, operate within any defined organization, they nevertheless impacted on the economy in many important ways (Olubomehin, 2012; Ogunbodede, 2008).

The first discernable way in which the motor transporters impacted on the society was that they constituted an important segment within the economy. Such was their growing importance that by 1934 they formed a union, the Nigerian Road Transport Union. Although, there are no

detailed information on the structure and modus operandi of this early motor transport union but they had offices in several cities in the country. The formation of a motor transport union was a new development in colonial Nigeria as such never previously existed. The union was meant to defend and further the collective interests of the motor transporters within the colonial setting. Thus in the 1930s, it fought and successfully resisted attempts by the colonial government to impose higher duties on vehicles in areas where road transport was competing with the railway (Oshin, 1990; Ogunbodede, 2008; Olubomehin, 2012).

The early motor transporters in Nigeria were concentrated in the Southern part of the country. Many of them were in South Western Nigeria and a few in the Eastern part of the country. In Lagos, the leading transporter was W.A. Dawodu while Messrs S.O. Ojo and Maiyegun operated in Abeokuta. From his base in Lagos, Dawodu expanded his transport services to the environs of Kano in northern Nigeria. Apart from being a large vehicle importer, he also ran a freight service with eight two-ton trucks. Another early Nigerian transporter was Dr. Orisadipe Obasa of Ikeja, Lagos. He had buses and vans, which operated in Lagos in 1915. Obasa's wife named Olajumoke was also reputed to be a wealthy road transport owner. But apart from the Dawodu and Obasas, records also talk of Anfanni Motors owned by an African woman who was in the business of hiring out car and trucks in Lagos (Drummond-Thompson, 1993; Olubomehin, 2012).

Away from developments in Lagos, there were twenty-one lorries operating in Egba division alone, in addition to many others working in the district, but which were registered outside the province. In Ijebu, there were two leading transporters, namely T.A. Odutola and Obafemi

Awolowo. Indeed, there were at least thirty lorries operating in Ijebu province in 1924. Most of the roads were well served by motor transport services. Many of the transport services in Ijebu and Egba divisions were being run by private motor transporters. Oyo and Ondo provinces were not left out in the services of motor transporters. Mr. Salami Agbaje was a leading motor transporter based in Ibadan, Oyo province. Agbaje had a successful transport enterprise and the operation of his business was cited as one of the reasons for the closure of the government motor services in Southern Nigeria. By the 1930s Agbaje was still running his transport business in Oyo province and he was said to have participated in the 1937 general motor strike. By 1921, there were 174 motor vehicles in Oyo province and by 1924; the number had increased to 504 (Drummond-Thompson, 1993; Ogunbodede, 2008; Olubomehin, 2012).

The eastern and other regions of Nigeria were not left out by the activities of the motor transporters. In the East, one of the earliest transport undertakings was Messrs Summers Transport of Aba. This was a private European undertaking established between 1918 and 1919. Its operation covered the whole of the Eastern provinces. Another motor transporter, which emerged in this region, was Messrs Ojukwu Transport. The motor transporters in eastern Nigeria carried bunker coal from Enugu to the river fleet at Onitsha where they competed for a share of the palm produce, and carried groundnuts and other produce from Katsina to Kano. They also carried passengers and cotton in competition with the lorries of the Railway Road Motor Service. Drummond-Thompson (1993) writes that one Chief Elijah Henshaw also operated in Eastern Nigeria in the region between Oron, Opobo and Ikot Ekpene providing motor transport services, which included government contract for mail, loads and passengers. Another transport outfit in the Eastern Nigeria was M.N.

Effiom's Transport Company, which by 1928 had a considerable fleet of lorries (Njoku, 1978; Ogunbodede, 2008; Olubomehin, 2012).

In the mid-west region, there was Messrs Armels Transport of Benin, which ran mail contract from Osogbo to Asaba while in the northern region, Messr's Arab of Jos carried mails to Maiduguri. Apart from transporting mails, the transporters generally provided rural and inter-city services (Oshin 1990). In northern Nigeria, record talks of T.H. Jackson of Lagos who in 1913 rented ten plots in Kano for the purposes of motor transport. There were also applications for plots from a large number of non-Europeans for the purposes of setting up motor transport in the Sabon Gari area of the northern region (Drummond-Thompson, 1993). While the private transporters were busy with their operations, the government railway motor transport continued to operate in the 1920s and 30s in the northern region. Indeed, by 1932 it had in its fleet of motor vehicles 24 lorries and 20 trailers. Many of the vehicles reportedly plied the unpaved roads of Northern Nigeria (Oshin 1990; Ogunbodede, 2008; Olubomehin, 2012).

The account of the activities of the Nigerian motor road transporters will be incomplete without mentioning the roles played by some foreigners who were also involved in the motor transport business. The foreigners were mainly Syrians and the Lebanese and a few Europeans. Although they were not Nigerians, they constituted a significant part of the road transport sector. To that extent, a look at their activities would give us a more complete picture of the role and impact of the transporters on the indigenous economy during the colonial period. Whereas the African transporters rarely owned more than three or four trucks at a time, the Levantines ran a fleet of vehicles, which in the thirties, were in the range

of thirty or more vehicles apiece (Oshin 1990). Describing the Levantine transporters, Oshin observes that they had offices, yards, and sheds that were equipped as maintenance shops; in some cases, they had warehouses and transit sheds. They also had tractors and trucks drawing trailers. The lorries of the Syrians and Lebanese were the largest and heaviest load-carriers on the roads. They hauled heavy traffic between Lagos and Ibadan and worked from Kano and Jos to Maiduguri (Oshin, 1990; Ogunbodede, 2008; Olubomehin, 2012).

One of the European road transport enterprises named Weekes Transport expanded its operation from eastern Nigeria to Osogbo, Oyo province in 1927. Weekes was later sold to Beeres Transport Company in 1934. This operated between Ibadan and Abeokuta, Ife, Ijebu Ode and Ogbomosho; its operations also extended to Oyo and Ede. Several other European exporting firms which had become established in western Nigeria during this period had lorries for transporting produce and distributing imported goods. From the above analysis, we can see that motor transporters contributed to the transformation of the economic terrain of Nigeria, thereby supporting the thesis that the motor transporters played an important role as an agent of economic change in colonial Nigeria (Oshin, 1990; Ogunbodede, 2008; Olubomehin, 2012).

Another important way in which the road transporters impacted on the economy was that their services paved the way for the European trading firms to move from the coast into the hinterland of Nigeria. From 1920, many of the firms started opening shops in different parts of Nigeria.
In western Nigeria, Messrs John Holt and Miller Brothers which had been in the Ijebu lagoon market of Ejinrin since 1917 moved to the in-land town of Ijebu Ode and opened a store there in 1923. Further in-land,

Messrs G.B. Ollivant and Paterson Zochonis started business in Oyo in 1921. Between 1923 and 1924, Messrs Maclver Limited and MacNeil Limited operated in parts of Ondo province. In northern Nigeria, the British Cotton Growing Association took advantage of roads, which had been built to move their operations into that part of the country. The presence of the European trading firms injected life to the economic activities of country. The firms acted as agents for the exploitation of the agricultural wealth of the region. They purchased produce through their African agents who acted as middlemen between the farmers and the exporting companies. They also distributed imported merchandise to smaller markets in villages through these African middlemen. In this way, these trading companies intensified the economic activities in their areas of operation (Ogunbodede, 2008; Olubomehin, 2012).

Related to the above is the way in which the activities of the motor transporters aided the evacuation of agricultural produce from the Nigerian interior to the coast. From the 1920s, many of the major towns in western and eastern Nigeria had been linked by road. Roads had also been constructed in many parts of northern Nigeria. These roads were built to link the railway, for the railway ran vertically from Lagos through Ibadan, Ilorin, Jebba to the northern part of the country. Another line ran vertically from the eastern region to the northern provinces. The roads were constructed as feeder roads. They were meant to bring produce from the interior to the railway stations. In Western Nigeria, these roads made it possible for the lagoon or coastal markets to receive commodities from the hinterland (Ogunbodede, 2008; Olubomehin, 2012).

From these lagoon markets produce got transported to Lagos for onward shipment overseas. From the lagoon markets also, imported goods found

their way to various markets located in the interior. From Northern Nigeria, the railway brought produce, which both the traditional transport system and road transportation had delivered to the railheads. Motor transporters contributed to the conduct of internal trade in Nigeria during the colonial days. The transporters had fixed days of the week when they went to the villages to convey farm products to town markets. Nigeria had important local markets spread across the length and breadth of the country and traders patronized these markets moving back and forth their merchandise. Just as motor transportation was useful to the indigenous traders, the European trading companies also made use of the services provided by the motor transporters to distribute European manufactured goods within the country. Related to this point is the way in which the activities of the road transporters led to an increase in the number of markets in our study area (Hodder, 1963; Ogunbodede, 2008; Olubomehin, 2012).

There is no doubt that the services provided by motor transporters contributed to economic growth in Nigeria. An evidence of this was the establishment of new markets. Although the actual numbers of new markets established were not known but there is evidence that road transport services brought about an increase in the number of existing markets. For example, B.W. Hodder observes that as from the 1920s when motor transport system became more widespread in Western Nigeria, application for opening of new markets increased. Applications also came in for the improvement of stalls and sheds in the existing markets (Hodder, 1963; Ogunbodede, 2008; Olubomehin, 2012).

Furthermore, the services provided by the motor transporters promoted inter-regional trade between the people of Nigeria and their neighbours.

A good example of this existed in South Western Nigeria where motor transportation connected traders in Egbaland with their neighbours in Dahomey (now known as Benin Republic). On the basis of its impact on trade, it can be said that the motor transportation brought about an expansion in trade and also intensified the pre-colonial trade relations between the peoples of Nigeria and their neighbors. The point must also be made that the services provided by the motor transporters brought about a reduction in the cost of production and it also tamed distance, both of which, in the days before the introduction of motor transportation had constituted serious inhibition to the growth of the economy. As such, road transporters enabled Nigerians to gain access to, and harness extant and new resources, thereby releasing labor and capital previously tied up in less productive enterprise or isolated by distance. The road transporters aided the smooth movement of both capital and labor from regions where they were formerly less engaged or less productive to regions where they were adequately engaged thereby contributing significantly to the dynamism of the Nigerian economy during the colonial period (Ogunbodede, 2008; Olubomehin, 2011).

In a sense it can also be said that the motor transport workers made up for the failure of the railway transport system. But for the motor transport system, Nigeria would have suffered heavily due to the failure of the railway transport system. Indeed, the economy would have experienced serious setback as a result of this. The lorries and trailers owned by the transporters intervened in moving heavy goods which otherwise would have been transported by the railway, had the railway been in a good working condition. It was said that road transport contributed to the decline of the railway (Oshin, 1990; Oshin, 1991) as it carries much of the freight, which ought to have been carried by the railway but the fact is

that road transportation complemented the services of the railway. The impact of the railway was generally limited to the areas where its tracks passed, thereby making it difficult for goods produced in areas beyond this track-range to reach the final consumers. In such places, the situation was saved by motor transport, which through its flexibility, got to the very remote areas and helped producers in getting their goods to the market. In this important respect, the motor transporters contributed to the development of trade and market in Nigeria during the colonial days and as such, acted as engine of economic development (Ogunbodede, 2008; Olubomehin, 2012).

More than this, the motor transport sector provided employment for many Nigerians. This was an invaluable service to the Nigerian economy. Generally, a road transporter either began as a driver or as a bus conductor. Few started as vehicle owners. During the colonial era, there were many notable vehicle owners in the country. Some examples have already been cited in this paper. The significant point to note is that many of the major transporters were in themselves employers of labour. For example, W.A. Dawodu's transport firm had a workshop in Osogbo, which employed fifty men while Salami Agbaje also had a big transport enterprise in Oyo province, which by 1924 engaged the services of a European mechanic in addition to other workers. In 1925, Agbaje reportedly made an offer to rent the government services' garages at Oyo and Iseyin. This is an evidence of the expansion of his operations (Drummond-Thompson, 1993; Ogunbodede, 2008; Olubomehin, 2012).

In their own right, therefore, these transporters provided employment for many people, Nigerians and foreigners alike. Beyond this however, the road transport system by its very nature created employment for many

people. It was the usual practice for a licensed driver to engage some two to four apprentices, who accompanied him on his journeys. In so far as they remained with the master-driver, such apprentices were in gainful employment. Apart from this, an important industry which grew out of the road transport business was that of motor repairing. Originally, the few Nigerians who began to provide this service obtained their training and experience while in the service of either the government or a commercial firm (e.g. UAC Motors). They in turn trained a number of apprentices to handle simple mechanical faults in vehicles. It is estimated that Nigeria had about 47,000 people employed in the road transport sector by 1960 (Ekundare, 1960; Ogunbodede, 2008; Olubomehin, 2012).

Many of the Nigerian motor transporters entered into the transport business first as drivers, but they later became vehicle owners. Others started as owners with only one vehicle but later acquired more vehicles. One Ijebu businessman named Timothy Odutayo Kuti popularly called "Abusi Odumare" is a one good example of such people who entered into the transport business with a very humble beginning. Abusi went into the road transport business in 1942 with the money he realised from the sale of a house he built when he was a class teacher. Later on, he bought more lorries, which he used for transporting produce from Ondo to Lagos. Through shrewd management, the number of lorries he owned grew from one to six. When the vehicles became too many for him to manager as an individual, he went into the business of selling vehicles on hire-purchase basis. At a point he was importing vehicles from Europe, which he sold to other indigenous road transporters. We can imagine the number of people who were employed by Chief Kuti, an evidence of how the motor transporters in Nigeria contributed to the provision of employment for many people (Ogunbodede, 2008; Olubomehin, 2012).

Many of these indigenous businessmen personally raised the capital to start their businesses, as it was often difficult to get loans from the bank in those days. It is necessary to point out that by venturing into a transport business, road transporters were demonstrating initiative, boldness and ingenuity, which are often denied by apologists of colonial rule. Many of the Nigerian road transporters made a lot of money from the transport business. Chief Kuti, for instance, built over a dozen houses from the profit realised from the transport business. Apart from this, many of the transporters sent their children to schools, performed their social obligations in the society and bought some of the best cars available in the society at that time for their personal use. The exploits and success story of other road transporters like Dawodu of Lagos and Salami Agbaje of Ibadan have been well documented (Drummond-Thompson, 1993; Adeboye, 2001; Olubomehin, 2012).

The involvement of these Nigerians in the motor transport business brings out the dimension of indigenous involvement in the colonial economy. Whereas the government at various levels was deeply involved in the building of roads, the transporters mainly provided the transport services. Without this, it would have been difficult for motor transportation to serve the economy. The motor transporters not only sustained the various economic activities engaged in by the people, but they also provided employment opportunities for thousands of people who ordinarily would have been unemployed. Furthermore, the transporters boosted agricultural production as harvested products are readily moved from the farms to the market centres. This reduced the problem of crops getting spoilt after harvesting. Perishable goods, which used to get spoilt before due to transport constraints were now moved more speedily to the markets. This brought a great encouragement to

farmers and served as an important boost for the Nigerian agricultural sector (Ogunbodede, 2008; Olubomehin, 2012).

2.1.8.2. THE NIGERIAN MOTOR TRANSPORT OPERATORS SINCE THE TIME OF INDEPENCE

Nigeria got her independence in 1960. From this date up to the present time, both the civilians and the military have ruled Nigeria at different times. The period provides an opportunity to have a look at the dimension of continuity, change and adaptation in the examination of the role of the motor transporters within the Nigerian economy. One important area in which the road transporters have continued to impact on the economy since 1960 is in the provision of employment opportunities for many Nigerians. This is a very important impact in a country which overtime has found it difficult to proffer adequate and lasting solution to the high rate of unemployment in the economy. Particularly since the 1980s, unemployment has led to widespread poverty, increased crime rate and frustration within the country. Frustration arising from unemployment has been linked with the various aggressive behaviour prevalent in the society including the menace of kidnapping currently facing the country (Ogunbodede, 2008;Olubomehin, 2012).

In this particular regard, the road transporters have made significant contributions towards reducing the rate of unemployment in the country. It is estimated that over 1.5 million people are today engaged in the road transport sector. An important change in this regard is the increasing number of university and polytechnic graduates among the membership of the motor transporters. Since the 1980s, the austerity condition in the country and the difficulty of getting office jobs have driven many to seek employment in the road transport sector. This is a good development for the economy because it means that people are becoming self-employed

unlike in the past when young graduates had to wait for white-collar jobs in the towns and cities. A very good example of some of these graduates now transporters is the Eastern Nigeria based transporter, Mr. Frank Nneji who is the owner of the popular transport service known as Associated Bus Company Ltd. (ABC Transport). The company operates on routes not only within the country but also along the West African sub-region. Mr Nneji is a Biology graduate from a Nigerian University. His transport business is a leader in the inter-city road transport business in Nigeria (Adekunle and Kasumu, 2005). Perhaps because of their level of education, graduates like Mr. Nneji who have gone into the transport business appear to be doing very well (Olubomehin, 2012).

Another positive development in the history of the road transporters in post-colonial Nigeria is the entry of big time Igbo transporters into the transport business. They owned luxurious buses, which plied different routes to the northern and western part of the country from their base in Igbo land. This is a new factor of change in the transport sector and indeed, in the evolving history of the road transporters in Nigeria. The pioneers in this respect included individuals like D.D. Onyemelukwe, J.C. Ulas, Louis Philip Ojukwu and Chief Augustine Ilodibe the owner of the popular transport outfit known as Ekene Dili Chukwu. Other transporters were Chidi Ebere, Izuchukwu and Chief C.N. Okwunwa. The new entrants into the road transport business in Eastern Nigeria include the owners of Emenike Motors, Micmerah International Agency, G.U.O. Okeke transport service, F.G. Onyenwe, Dan Dollars, The Young Shall Grow Motors and ABC Transport Service (Iweze, 2011). Of these luxurious bus enterprises, ABC Transport has witnessed a most phenomenal growth, with the company employing many Nigerians and

the outfit spreading its transport services from Nigeria to the West African sub-region (Iweze, 2011; Olubomehin, 2012).

As part of their contribution to the growth of the national economy, the road transport workers have continued to provide millions of naira in revenue to the government through the payment of various duties for hackney permits, drivers' licenses, vehicle licenses, vehicle plate numbers and insurance, to mention just a few. In all, we can say in this particular regard that the transporters have served as partners with the government in the process of national economic development. In 1978, a milestone occurred in the history of the road transporters in Nigeria with the formation of the National Union of Road Transport Workers popularly known as the (NURTW). Since this date, the activities of the road transporters have revolved around the NURTW (Ogunbodede, 2008; Olubomehin, 2012).

2.1.8.3. NATIONAL UNION OF ROAD TRANSPORT WORKERS

The NURTW membership, broadly defined, include individuals (mainly male), who are involved in the use of different modes of transport such as motorbikes (motorcycles), buses, cabs, tankers and tricycles - for conveying passengers and goods from one destination within the country to another. The need for orderliness prompted members of the sector to form two associations, namely the Road Transport Employers Association of Nigeria [RTEAN] and the National Union of Road Transport Workers [NURTW]. Though the RTEAN predates NURTW, it is less active than the NURTW, which was registered as a trade union in 1978, and is an affiliate of the Central Labour Organisation [CLO], now known as the Nigerian Labour Congress [NLC]. While the RTEAN is less known, the NURTW has grown overtime, with its membership

burgeoning on daily basis (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

Thus, it boasts of over 1.5 million membership throughout the federation. With the exclusion of petroleum tanker drivers, all professional commercial drivers are automatic members of the Union. As such, the NURTW serves as an umbrella body for drivers operating motorbikes, taxi cabs, tricycles, buses (both intra and inter-state services), trailers and lorries that engage in the conveyance of passengers and goods. The main objective of the Union is to promote the economic welfare of its members. This explains the raison d'etre for its engagement in the series of programmes like Road Safety, Immunisation, Family Economic Advancement Program [FEAP], Mass Transit Implementation, HIV/AIDS, and the Road Accident Medical Aid [RAMACHE] – a scheme that provides first aid for accident victims (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

In order to manage the affairs of the union, the road transport workers set up an administrative structure. They established secretariats in units, branches, zones and states. Each of these has secretaries and elected officers, who are headed by chairmen, to coordinate the activities of the transport union throughout the federation, Federal Capital Territory (Abuja) inclusive. Each of the state secretariats has between ten and twenty elected officials. This is in addition to the State Secretary and some other staff, whose efforts contribute to the everyday coordination of the activities of the local branches, under each state council's jurisdiction. Given the coherent and sound administrative organization of the road transporters described above, the transporters have become partners with the government in the process of national political and socio-economic

development. Considering the situation during the era of military government in the country. The Nigerian military dictated policies that were used in governing the country during this period. During this period, the military influenced state policies to suit their own whims and fancies. But during the period, the road transport workers operated as a form of pressure group, out to fight for what they considered to be in the best interest of the country (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

Following the cancellation of the 1993 Presidential election and the emergence of late Gen. Sanni Abacha as the military head of state, the new ruler attempted to transform himself into a civilian President. This move was opposed by Nigerians including the road transport workers operating under the bigger umbrella of the Nigerian Labour Congress (NLC). The road workers joined others in opposing the ambition of General Abacha. Since 1999 when Nigeria returned to democratic rule, the politicians have continued to seek the support of the road transporters while seeking to be elected into political offices. The politicians usually take advantage of the large population of the road transporters, which is one of the largest that any union could boast of in the country. Not only this, because many of the road transporters are very close to the people at the grass root level, politicians often used them to influence the people at that level in order to achieve their political end (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

Due to the evolving rapport between the politicians and the road transporters, a particular scenario developed in the political terrain of Nigeria whereby some state governors give officers of the NURTW who have supported their candidature into political office so much freedom to

operate within the society. Thus, the officials of the road transport workers can be seen perpetrating all kinds of offensive acts (such as extorting motorists) within the society without the police lifting a finger to arrest the offenders. This is so because the offenders already have the support of the state governor who, in any case, is the chief security officer of the state. In return for the support they get from the government of the day, the officers of the road transport union often pledged their continued support for the governor. In some of the states in Western Nigeria this scenario played out between 1999 and 2011. Ibadan, Oyo State in particular presents a most vivid example of this scenario. There, the road transport workers chieftains especially that of National Union of Road Transport Workers (NURTW), constituted ominous personalities that were dreaded during the tenure of the past governor of the state, Alao Akala. This is because of their various illegal acts, which the police preferred to permit because of the free rein that the state governor covertly gave them (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

The war-like scenario in Oyo state, which can be regarded as the negative extreme, did not obtain in other states. The road transporters in other states of the country did not behave like their counterpart in Oyo State. It gives one the room to say that perhaps the Oyo state scenario was an isolated case. This, therefore, tends to support the view that the road transport workers can equally prove to be responsible citizens of the country. For instance, the Chairman of the Ekiti branch of NURTW admonished members of the states branch to eschew violence, an advice that they held on to (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

Apart from their involvement in politics, the NURTW also carried out important activities in the society. In partnership with government and non-government organizations, the NURTW successfully participated in road safety campaigns, immunization programmes, family economic advancement programmes, mass transit implementation and Road Accident Health Insurance Scheme (RHIS). The RHIS is a medical treatment and compensation scheme for accident victims. The NURTW has also been particularly active in the campaign against the spread of HIV/AIDS. In various states of the federation, the union has collaborated with the Family Health International in Nigeria, Society for Family Health, American Centre for International Labour Solidarity, National Action Committee on AIDS (NACA) to create awareness on modes of transmission and prevention (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

The union works actively with these agencies to teach drivers the dangers involved in HIV/AIDS. The union therefore, contributes to the government's efforts at checking the spread of the disease in the country. Away from health matters, the NURTW also contributes to the society in other important respects. The union holds regular meetings with Vehicle Inspection Officers (VIOs), the Federal Road Safety Corps (FRSC) and other government road traffic agencies. At such meetings drivers are told the importance of having valid vehicle particulars and keeping their vehicles in good and road worthy state. They also teach drivers to behave well to passengers. The height of such training workshops is usually from September of every year through to December when there is high traffic of vehicles on the road. The FRSC usually intensify its activities in teaching drivers to avoid over- speeding and drinking alcohol while driving. All these, of course, have helped to reduce accidents on the

roads. Oral evidence also shows that members of the union engage in road maintenance particularly in areas where government has failed to carry out such work. Hence, members of the NURTW can be seen filling potholes on roads and cutting grass to aid driver's visibility in corners and other dangerous spots on the road. Of course, when such good works are done both commercial and private vehicle owners benefit from the community effort (Olubomehin, 2001; Olubomehin, 2012; Ayinla, 2013).

2.2. RAIL TRANSPORT

The current imbalance in modal share between rail and road transportation emerged after the 1960s. Up until then, the railway carried over 60% of the freight tonnage compared to its current share of less than 5%. The deterioration in the railways has been partly a result of insufficient budget provision by the Federal Government coupled with poor management by the monopoly operator, namely, the Nigerian Railway Corporation. In terms of infrastructure, locomotives and rolling stock are in very poor condition. In 2004, for example, 57.5 % of the wagon available were defective and could not be used, leaving only 36.6% in good working condition. The conditions of coaching stock and locomotive were also very poor resulting in reduced number of reliable service provided because of locomotive failures. The lack of funding/under-investment in the rail sector, uncoordinated purchases of equipment from different suppliers, inconsistencies in human capacity development and use of management consultants, made interchange of parts impossible (Ogunbodede, 2008; Innocent, 2011; Amba and Danladi, 2013; Abioye *et al.*, 2016).

2.2.1. TREND OF THE NIGERIAN RAIL TRANSPORT (1970 – 2015)

The trends of the Nigerian rail transport are presented in figures 2.1 and 2.2. Figure 2.1. shows passengers carried from 1970-2015. It can be observed that after 1984, the number of passengers carried declined and has been on the decline since, but with a slight increase in 2012 in response to government investment in the rail system and subsequently in the later years. Figure 2.2. shows total freight hauled from 1970 to 2015. It also follows a declining pattern similar to the passenger performance (Amba and Danladi, 2013; Abioye *et al.*, 2016).

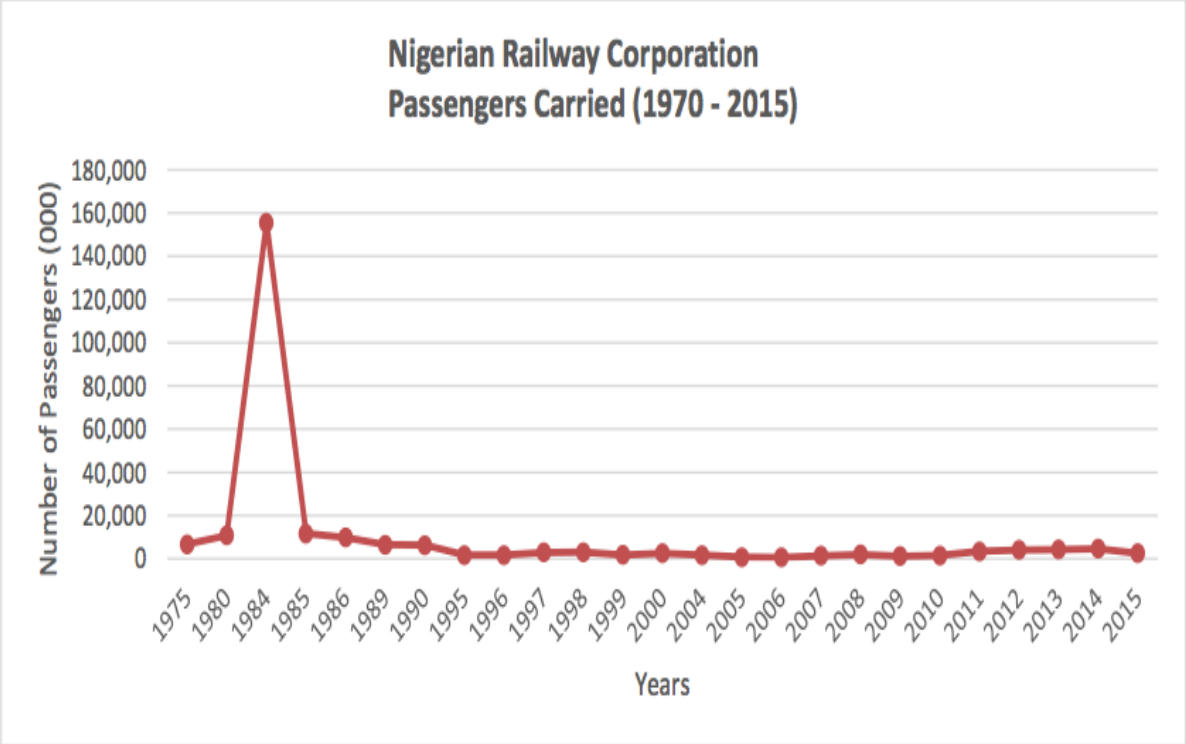

Figure 2.1. Total passengers carried by Rail transport in Nigeria (1970-2015) (Abioye *et al.*, 2016).

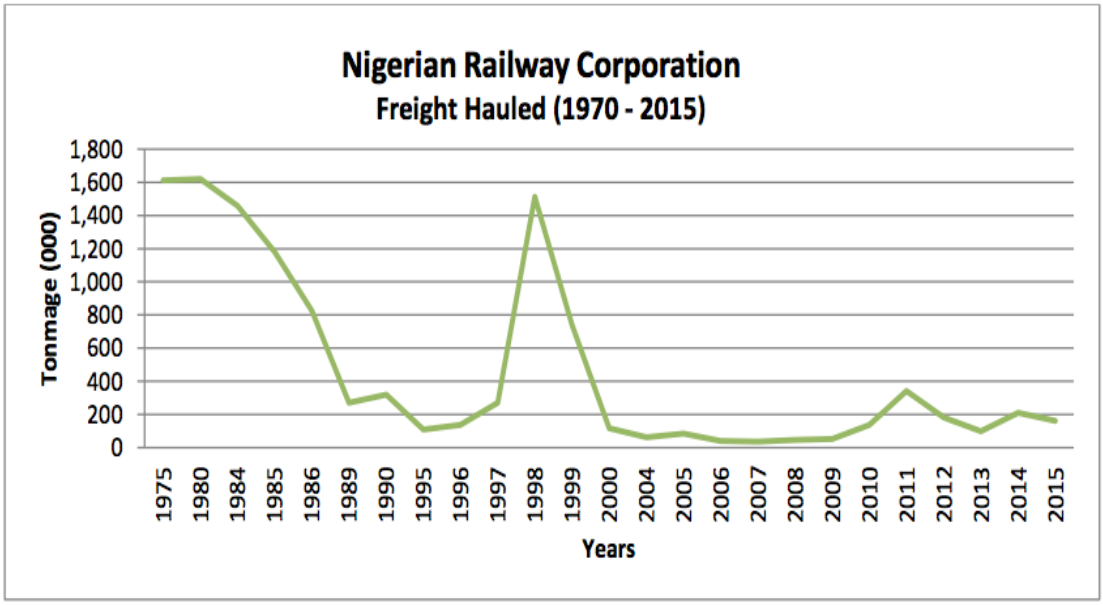

Figure 2.2. Total Freight hauled by Rail transport in Nigeria (1970-2015) (Abioye *et al.*, 2016).

2.2.2. NOTABLE CHALLENGES FACING THE NIGERIAN RAIL SECTOR

The Nigerian railway system has seen several challenges that are worth mentioning. Some of these challenges have been mentioned by several other researchers (Odeleye, 2000; Adesanya, 2010; Ademiluyi and Dina 2011; Amba and Danladi, 2013; Abioye *et a.l*, 2016).

Examples of these challenges include the following:

- Technical problems such as tight curves, steep gradients, rail buckling with associated track/speed limits.
- Poor communications/poor equipment/poor state of technology
- Government interference with management structure/frequent interference with NRC management
- Lack of freedom to set tariffs
- Underfunding/neglect of rail system for road transport development by government

- Falling rolling stock levels/shortage of locomotives
- Plummeting traffic levels (freight and passenger)
- Inflexible bureaucracy
- Lack of competent staff in various fields due to retirement of competent staff
- Volatile and militant labour union/Myriads of pensioners
- Irregular staff training
- Loss of patronage to the road transport sector
- Worn-out infrastructure
- Lack of maintenance
- Weak Political will and commitment: Lack of commitment in implementing and meeting the timelines for plans and programmes.
- Poor Safety measures: There has been a rise in rail accidents in Nigeria since the start of its revival due to poor safety measures. Traders display their wares across the rail lines and people cross the rail lines without caution, which has led to the death of some individuals. The trains are being overcrowded with rooftop passengers becoming a regular sight, which caused the death of a passenger who fell off the train and was crushed.

(Rasheed, 2013; Naija2day, 2013; Heather, 2013).

However, a project to revive the Nigerian railways is in progress.

2.2.3. NIGERIAN RAIL MODERNISATION PROGRAMME

The Lagos-Kano train has resumed operation after a major rehabilitation of the long distance track. The Port-Harcourt-Maiduguri rail line is been rehabilitated. Under the modernisation phase, the construction of the Itakpe- Ajaokuta-Warri is in progress and Abuja-Kaduna standard gauge

lines have been completed. The Abuja mass transit train is under construction. A light rail system is being developed in Lagos sponsored by the Lagos Metropolitan Area Transport Authority (LAMATA). The construction of the Lagos-Ibadan standard gauge double track would soon commence following the award of the contract to China Civil Engineering Construction Corporation (CCECC) by the federal government (Abioye *et al.*, 2016). New locomotives have been bought. The Minister of Transport has also hinted of a review of Railway Act of 1955 soon, which will remove the exclusive right to run train from the Federal Government and allow state, local governments and interested private firms into the business (Rasheed, 2013; Naija2day, 2013; Heather, 2013; Ogunesa, 2013). The Federal Government has articulated a 25-year strategic rail vision for future programmes of development in the Nigerian railways to be implemented in three stages as follows:

(1) System Transition:

- Operational Changes.
- Training.
- Investment Planning.
- Development of domestic capacity for production of rail materials.

(2) System Modernization:

- Conversion to standard gauge.
- Construction of new lines and extensions.
- Private Investment as well as Public private partnerships.
- Continue to develop National Technological Capacity.

(3) System Stabilization:

- Completion of conversion to standard gauge
- Construction of new lines and extensions

(FMT, 2013).

2.3. AIR TRANSPORT

By international standards, the size of Nigeria's aviation sector is modest. At present there are 19 airports under the Federal Airports Authority of Nigeria (FAAN). From an intermodal perspective, the major airports are well integrated with road infrastructure, and all access roads to airport have federal status. Land transport connections are, however, poor. Trips to airports are by cars, taxis or hotel shuttle transport. There is no access to the airport by the conventional mode of public transport, namely, bus or rail (Innocent, 2011).

2.3.1. SAFETY ASPECT OF AIR TRANSPORT

The aviation industry has witnessed several losses of lives and properties worth billions have been abruptly destroyed. Transportation by air is one of the risky challenges that have directly affected the Nigerian economy in a negative way over the years.

Table 2.5. Record of Air crashes: 1967-2012 (ASN, 2010; Abbas *et al.*, 2012).

YEAR	TOTAL CRASHES	TOTAL KILLED
1967-1976	28	374
1977-1986	11	110
1987-1996	31	675
1997-2006	35	523
2007-2012	8	198

2.3.2. CAUSES OF AIR CRASHES IN NIGERIA

Several factors are usually responsible for plane crashes, some of which includes: Environmental factor, pilot error, Ageing/faulty Aircraft.

2.3.2.1. Ageing/faulty Aircraft:

Most airline operators go for the fairly used/ageing aircraft which are faulty and poorly maintained instead of purchasing new modern ones (Omoleke, 2012). For example, the Dana Air crash that occurred in 2012 was caused by dual engine failure (AIB, 2012).

2.3.2.2. Pilot error

Pilots, who are inexperienced and not properly trained can be a major cause to crashes, reason being that they may not always know what to do to avert impending danger (Edeaghe *et al.*, 2006; Abbas *et al.*, 2012).

2.3.2.3. Environmental factor

Severe crashes have occurred during conditions of smoke or fog, which can greatly reduce visibility. For example, the Sosoliso crash which occurred in 2005 was mainly caused by the bad weather condition (AIB 2006; Abbas *et al.*, 2012).

2.3.3. SECURITY ASPECT

Fears of insider threat, terror attacks are now redefining the security situation at Nigeria's airports. There is loose security at airports in Nigeria. There is no solid perimeter fencing at most of the airports in the country. The lack of perimeter fencing allowed grazing by the runway of some airports. Besides, the roads leading to some airports are not secured, as armed robbers and militants attack travellers. There are also petty thieves in some airports who capitalize on the loose security to break into visitor's car and carry handy belongings (Ladan, 2012).

2.3.4. EMISSIONS

Aviation is a major source of local air pollution, leading to significant public health impacts. Jet emissions can cause lung, throat, nasal, larynx

and brain cancer, lymphoma, leukemia, asthma and birth defects. Highly carcinogenic benzpyrene, a by-product of jet fuel combustion attached to soot, can cause cancer and tumors in humans through lung and skin absorption (Krzyzanowski *et a.l*, 2005; ICAO, 2010).

2.3.5. ENERGY CONSUMPTION

In Nigeria, Twenty-four per cent (24%) of the dual-purpose kerosene consumed goes to aviation, and it is the sole fuel (Badmus *et al.*, 2012).

2.3.6. NOISE POLLUTION

Aircraft noise nuisance in Nigeria is on the increase, one of the reasons being that most airline operators are only able to afford ageing aircraft. A critical analysis of the situation of aircraft nuisance around some metropolitan cities in Nigeria is even more worrisome as the situation can only get worse rather than improving. Studies of aircraft noise and quality of life of residents living around airports in Nigeria has been carried out and findings show clearly that the quality of life of people living around airports has greatly been impaired by noise from aircraft (Obisung *et al.*, 2013; Akpan *et al.*, 2012; Omubo-Pepple *et al.*, 2010).

2.4. MARITIME TRANSPORT

Maritime transport is also called water transport including inland waterways. The main ports in Nigeria are Lagos, Port Harcourt, Warri and Calabar. The maritime sector has contributed towards the development of the Nigerian economy. However, the actualisation of the huge potentials of the maritime sector is being retarded due to: poor policy implementation, inconsistency and lack of skilled manpower (Michael, 2001; Innocent 2011).

2.4.1. HISTORY OF THE NIGERIAN MARITIME INDUSTRY

As at the time of Nigeria's independence in 1960, the maritime industry was largely undeveloped. Then the country only had two major seaports, which were in Lagos and Port Harcourt. To a great extent, these ports were inadequate to handle a large volume of maritime activities. There were serious problems of poor local content in all aspects of the industry. The country lacked indigenous manpower to effectively manage the industry and indigenous shipping companies did not control a significant share of commercial activities in the industry (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

To enhance the performance of the maritime industry at that time, the new government continued efforts to develop the industry through the Nigerian Ports Authority (NPA). Thus, the NPA continued the expansion of existing port facilities at Lagos and Port Harcourt in accordance with the first National Development Plan of 1962 –1968. The NPA also made significant efforts to develop indigenous manpower within the industry. However, there were no significant measures to improve local content with regards to coastal and inland shipping. The problems of the industry in those early years of national independence were further compounded by the Nigerian civil war, which led to the closure of the Port Harcourt port and a cessation of commercial maritime activities in most of Nigeria's inland waters. During that period, the Lagos port became the only functional seaport in Nigeria. This subsequently gave rise to problems of port congestion (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

Towards the end of the civil war in 1969 the federal the military government empowered the NPA to acquire the ports of Warri, Burutu

and Calabar, which were then under private control. Also by the end of the war, the government commenced the reconstruction of ports in accordance with the Second National Development Plan of 1970 –1974. To some extent, these initiatives did not tremendously enhance the performance of the maritime industry. Apart from the Lagos port, other Nigerian ports did not significantly participate in maritime activities after end of the civil war. Consequently, the problem of port congestion became unprecedented at the Lagos port in the period after the civil war following the massive importation of reconstruction equipments and materials. That period marked an inglorious era of port congestion crisis known as the 'Cement Armada'. At the height of the crisis in 1975, up to 450 ships had to wait for an average of 180 days before they could berth at the Lagos port. This had negative effects on the performance of the maritime industry and the Nigerian economy. To reverse this state of affairs, the federal government embarked on remarkable projects to enhance the performance of the industry between 1975 and 1980. These projects were particularly aimed at building new ports and increasing the capacity of existing ports. This led to the establishment of new ports in Tin Can Island, Warri and Calabar; plans were also made to establish a new port at Onne (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

Another remarkable initiative that followed was the improvement of local content in terms of fleet development. As a result of this programme, Nigeria had over 24 vessels in her national fleet by the early 1980's under the management of the Nigerian National Shipping Line (NNSL). There were also attempts to enhance national capacity with regards to ship building and repairs. Although the above developments considerably enhanced the performance of the maritime industry, it however failed to

achieve the desired objectives. During that period, indigenous shipping companies carried only about 11% of the total volume of Nigerian maritime traffic and earned less than 9% of the total freight revenue. The performance of the industry was also affected by low importation following the national economic downturn in the 1980s, which caused an under- utilization of port facilities (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

In 1987, the federal government made a remarkable attempt to enhance the performance of the industry through the establishment of a National Shipping Policy (Decree 10 of 1987). The policy in accordance with the United Nations Commission for Trade and Development (UNCTAD) Code on Liner Shipping was meant to increase local content with respect to domestic shipping. This policy was also followed by the Commercialization Policy of Decree 25 of 1988, which sought to revitalize the NPA by allowing the organization to make profits. It also sought to give the NPA a high degree of administrative autonomy. However, both policies failed to achieve their objectives due to corruption and incompetent administration (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

In 2003, attempts were made to enhance the performance of the industry through the enactment of the Coastal and Inland Shipping (Cabotage) Act. The Act seeks to promote the development of indigenous capacity in domestic maritime trade by prohibiting the use of foreign vessels and foreign nationals in such trade. It also establishes a vessel-financing fund to enable the development of indigenous ship acquisition capacity through the provision of financial assistance to Nigerian operators in domestic coastal shipping. However, the Cabotage Act is yet to positively

impact on the performance of the Nigerian maritime industry. About 70% of seafarers operating in Nigerian inland waters are foreigners. As a result of this, Nigeria annually loses about 150 billion Naira. To a considerable extent, the success of the Cabotage Act has been hindered by the lack of an indigenous fleet, lack of indigenous manpower, incompetent administration, lack of financial support and corruption (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Oluwakemi, 2012; Gigado, 2015).

Notwithstanding several efforts to develop the Nigerian maritime industry in the last fifty years, it appears to a great extent, that the industry has not achieved optimum performance. This state of affairs has been caused by various factors such as: corruption, lack of human capacity, lack of adequate financing, incompetence, excessive government control, poor implementation of laws and policies and maritime insecurity. With regard to maritime insecurity, the Nigeria Trawler Owners Association (NITOA) lost over 60% of their entire fleet to piracy between 2006 and May 2010. As a result of this, many fishing companies are now relocating to other countries and some are even closing down completely. Other factors responsible for the poor performance of the Nigerian maritime industry include: poor management of ports resulting in the increasing congestion of the Lagos port and the under-utilization of other ports within the country; lack of adequate facilities to enhance the quick clearing and removal of cargo discharged at ports and high tariffs. As a result of high tariffs, many Nigerian importers now prefer importing cargoes through the ports of neighboring countries such as the Cotonou port (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2. DEVELOPMENT AND IMPORTANCE OF MARITIME TRANSPORT TO THE NIGERIAN ECONOMY

The significant importance of the maritime transport to the Nigerian economy can be identified in the following areas of its contribution namely:

1. Transportation
2. Facilitation of Trade and Commerce
3. Revenue generation and availability of finance
4. Promotion of Tourism
5. Development of related economic activities
6. Creation of employment and job opportunities
7. Enhancement of industrial growth and development
8. Institutional development
9. International relations and peaceful co-existence
10. Socio-political harmony
11. Defense and Security – territorial protection

(Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.1. Transportation

The development of waterborne transport in Nigeria is induced and facilitated not only by its geophysical physical features in which there are navigable inland waterways, direct access to the Atlantic Ocean, but its economy is also largely depended on the exportation of agricultural products and crud oil and the importation of machinery, equipment and raw materials for its industries and finished goods for its largely populated consumers. Therefore if Nigeria has been without maritime transport and a landlocked State, it will have been difficult and expensive

for its residents to engage in international and domestic trade and this would have had adverse effect on its economy. It is maritime transport that relieves other means of transport like rail, road and air and their infrastructure of avoidable pressure and congestion that they would they would otherwise have been under had there not been maritime transport carrying heavy cargo at less expensive cost (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

This helps to ensure that those modes of transport and their infrastructure are not over stretched. For instance, ferry services from mile two to Apapa and/or to CMS reduces traffic-jams on road transportation and the slowing down of economic activities and as a cheap and energy efficient means of transportation. It provides an alternative cheap and reliable means to other modes transportation and decreases the cost of transportation in the movement of oil, sugar, cement, fertilizers, or heavy equipment thereby allowing transport flow from land to sea. Thus, it is the "gateway" for cargoes. But for the availability of maritime transport in Nigeria, Nigeria would not have been talking of reaping the benefits of domestic and regional cabotage principle to its economy. The numerous merchant vessels visiting Nigerian ports and those positioned to berth in its ports evidence the importance of maritime transport in Nigeria and it can be correctly asserted that if there is no maritime transport, there will be no development of the Nigeria shipping industry (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.2. Facilitation of Trade and Commerce

Nigeria heavily relies on external trade to sustain its domestic economy through importation of raw materials and equipment; machinery used by manufacturers and for the exportation its crude oil, agricultural and manufactured products. The essentials of a reliable and cheap mans of

transportation which the maritime transport offers does not only make the landing cost of these cargoes lower but makes it possible for large tonnage to be carried over long distance and landed in Nigeria thereby reducing the cost of imported and manufactured good since transportation cost is one of the variables costs of production (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

It also meets the variable needs of shippers and passengers and ship-owners and performs the task that is vital to the sustenance and growth of the Nigerian economy and its international trade. The establishment and running of the export processing zone, Calabar is made possible by the maritime transport made available by the Atlantic Ocean and the Calabar port and meets the socio-economic needs of the country to cope with the challenges of globalization. Such zones are known for attracting export companies that provide employments for indigenes apart from revenue earned (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.3. Revenue generation and availability of finance

Maritime transport is of significant importance to the Nigerian economy because it generates a lot of revenue to the Federal and State Government which revenue is channeled towards the development of maritime infrastructure and other areas including health and education. The revenue comes from the registration of ships and their mortgages, custom duties, port charges and tariffs realized by the Nigerian Port Authority for the use of its facility by vessels that berth at Nigerian ports, corporate taxes paid by shipping companies, fees for licensing clearing and forwarding agents and freight forwarders and the registration of shipping companies (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

The National Maritime authority collects 2% statutory charge on gross earnings of shipping companies on imports and exports; while all payments and services offered and rendered to foreign vessels at Nigerian Ports are payable in foreign currency. The National Maritime Authority also fines earring tankers that pollute the Nigerian marine environment, whilst every vessel lifting crude oil pays mandatory rate. All the charges are made possible by Maritime transport. A substantial portion of the revenue collected by NPA and NMA are in hard currency thereby enhancing Nigerian foreign reserves. Therefore, any time there is an hiccup in the maritime sector like bunching or port congestion or labor strikes, it adversely affects the targeted revenues of these government agencies and the government it self. The revenue realized is available for the financing of socio-economic infrastructural developments and reduction of national debt, which in turn makes Nigeria to be credit worthy among the international community (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.4. Promotion of Tourism

Maritime transport promotes tourism in Nigeria in the sense that tourist are able to cruise in boats and coastal vessels on the Atlantic Ocean, the Lagos Lagoon and other inland waters and to visit various natural beaches on the Nigerian coastline for the of sight- seeing and relaxation. During Christian and Muslim festivals and public holidays, many residents in Nigeria cruise beaches for picnics, musical show, entertainment and relaxations. Tourism which the maritime transport enhances and facilitates is an avenue through which the State and Federal Government realize revenue which is channeled to developmental projects. For instance the Lagos State Government realizes from users of such beaches like Eleko, Lekki and also Taqua bay substantial revenue from their usage. The hospitality business it has encouraged has also

made it possible for guest houses, hotels and resort centers. eg Akodo on Lagos-Epe expressway which provides inter alia, employment, rest and entertainment facilities for the service of tourists and other persons (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.5. Development of related economic activities

Maritime transport has caused the springing up of new development and growth economic activities to service the maritime industry by way of multiplier effects. Shipbuilding and ship repairs yards eg; Nigerdock builds coastal vessels of not more than 300gt, tugs, barges, and support for use in maritime transportation. They also repair vessels in Nigeria thereby conserving foreign reserve that would have been spent in purchasing or repairing the vessels in abroad. The shipyards also help in developing indigenous capacity building in shipbuilding and ship repairs and attract business and revenue. Ship surveyors are there because there are ships to be surveyed (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

Banks also show interest in financing the acquisition of vessels and in their charter; whilst insurance companies provide various insurance covers to cargo, ships, freight, hull and machinery and other marine risks. The construction industry including the quantity surveyors, building engineers are engaged in the constructions, expansion and repairs and dredging of ports and inland waterways. Information technologists are engaged to supply and maintain computers, marine radio communication and radar systems for safe navigation, pilots and salvoes are engaged where necessary while freight forwarders, shipping agents, shipping consultants, maritime lawyers arise to supply the needed services for the maritime sector. The increased turnover of those engaged in the business relating to maritime transport contributes to gross domestic product and

increased economic activities (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.6. Creation of Employment and job opportunities

Maritime transport is also of significant importance to the Nigerian economy because it creates employment opportunities for Nigerians there by ensuring engagement of workers and reduction of social problems induced by employment. The shipbuilding and repairs industry employs workers to meet its various needs, seafarers/seamen; masters, engineers etc. are employed to meet the demands of the ship-owners, ship operators and demise charterers for the operation and manning of the vessels. The business made available by maritime transport to the various maritime related Nigerian professionals induces the need for the training of and availability of specialized personnel and manpower to service the maritime industry. It has been argued that the maritime industry in both its public and private sectors provide 10% of the job opportunities available in Nigeria. Its public sector including the Nigerian Custom Services, Immigration, Port police, Nigerian Navy, NDLEA, Standard Organization of Nigeria, Department of State Security Service, Federal Environmental Protection Agency, National Cargo Handling Agency, National Food and Drug Administration (NAFDAC), Nigerian Port Authority, Nigerian Shippers Council, National Maritime Authority and Nigerdock altogether provide about one million jobs. The private maritime sector including shipping companies also furnishes numerous categories of jobs to the national economy (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

The availability of jobs in the maritime industry have a multiplier effects on the development of other economic activities such as freight forwarding, dock working, stevedoring operations, towage, pilotage,

warehousing, marine insurance, banking, bonded warehousing and cargo handling all of which depends on the maritime sector for survival. It has also induced economic activities in the informal sector such as petty trading, hawking and food vending all of which gainfully engage Nigerians. Without the employments and job opportunities created by the maritime transport, unemployment situation in Nigeria would have worsened thereby leading to increased crime in Nigeria, which would overburden its economy (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.7. Enhancement of industrial growth and development

Industrialists' prefer to build factories, industries and sea ports near seaports in other to reduce transportation costs especially in the case of those industries that depend heavily on imported raw materials and equipment in other to manufacture finished goods for domestic and foreign markets. This reduction in transport cost also reduces the cost of their finished goods, which in turn increases the sales of their products, leads to high annual turnovers and enhances their growth. Some of the industries are at Apapa and Tin Can Island Ports are by Dangote for sugar and cement, Wasa Delmas, Dantata apart from the fishing industries in various jetties (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

As a result of the Calabar Port, the Calabar Free Trade Zone was set up in pursuant to which a lot of industries including foreign companies have been established and are still being established in other to manufacture for export. Industries engaged in the manufacture of goods for export are also being deliberately sited by seaports in other to take advantage of the attendant low cost of transportation of their manufactured goods and production. It has also being revealed by expert in transportation that

70% of industrial activities on Nigeria are sited around the port cities of Lagos, Warri, Port Harcourt and Calabar and that about 40% of industrial activities are found in the Lagos zone; while the Port Harcourt and Calabar Zone account for 23%. Apapa, Lagos industrial zone has Apapa, Tincan Island, Ro-Ro container Terminals. Consequently, the presence of ports due to maritime transport stimulates the growth and development of industries, which facilitates the growth of the Nigerian economy (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.8. Institutional development

Some institutions have been developed to service the maritime sector and which have been making substantial contribution to the Nigerian economy because of maritime transport. Some of these institutions are involved in the training and education of manpower resources including seafarers and engineers for the maritime sector and include the Maritime Academy, Oron; Nigerian Institute of Transport Technology, Lagos. Other institutes are Nigerian Shippers' Council for defending and protecting the interest of Nigerian shippers and encouraging shipping practices in accordance with international standards, Nigerian Maritime Authority for coordinating and implementing Nigerian's shipping policies and matters incidental thereto, Nigerian Port Authority and its subsidiary company for inter alia management and development of ports and infrastructure, Nigerian Navy for protection of Nigerian territorial waters and integrity from external aggression and national cargo handling company limited. Without maritime transport there would not have been these institutions and the Nigerian maritime industry and economy would not have benefited from their presence as it is now doing (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.9. International relations and peaceful co-existence

Nigeria is today a member of the international and regional maritime organizations including International Maritime Organization, United Nation Environmental Programme, Maritime Organization of West and Central African States from which it has been deriving immense benefits, because of maritime transport. Without maritime transport, Nigeria would have been holding merely an observer status in them. Through its membership of these organizations, Nigeria establishes and maintains friendly relations with co-members of them and Nigeria cooperates with them in matters of safety of marine transport and protection and preservation of the marine environment for the benefit of its economy. The establishment and equipment of the Nigerian Navy because of the presence of maritime transport has enabled the Nigerian Navy to play active peace-keeping and peace enforcement roles in West African countries of Liberia and Sierra Leone as a part of the ECOMONG Force thereby increasing Nigeria's rating internationally in peace keeping. The States concerned have also recognized in that respect, which has enhanced good international relations between Nigeria and them (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

Maritime transport can also be used for international patronage by Nigeria allowing some landlocked States free access to export or import goods needed in their economies. Should Nigeria also charge the landlocked countries favorable customs duties lower than charged by its neighboring coastal States, its relationship with the landlocked States will improve tremendously and remain friendly.

2.4.2.10. Socio-political harmony

There have been cases of inter-tribal and international marriages involving seafarers of various nationalities conducted on Nigerian vessels

or foreign vessels within Nigerian territorial waters because of the presence of maritime transport. This has encouraged the unity of various ethnic nationalities in Nigeria and encouraged socio- political harmony. Foreigners and foreigner seafarers bringing their cultural attitudes to Nigerian port had also enhanced cultural exchanges due to the presence of ports and maritime transport (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.2.11. Defense and Security – territorial protection

The defense and security of the Nigerian territory from external hostile espionage from aggressions and incursions through its territorial waters is in its national interests and is facilitated by maritime transport. Under the United Nations Convention on the Law of the Sea, up to the contiguous zone, Nigerian Customs and Immigrations can put their border posts for their activities including checking for smuggling, but maritime transport makes it possible for access to the contagious zone. Nigeria also has the waterborne transportation need for her Armed Forces for the quick deployment of military personnel, equipment and supplies in times of emergency or crises in Nigeria and as part of the ECOMONG Forces in the West African sub-region because of maritime transport. The Nigerian Navy is able to repel any form of external aggression because of the existence of maritime transport (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

2.4.3. PROBLEMS OF THE NIGERIAN PORT SYSTEM

The development of the Nigerian ports system was influenced by three factors namely; Historical (involving the facilitation of the slave trade and for the British then colonial masters to ship Nigerian natural resources through Lagos, Bonny, Warri, Degema), Economic (in order to facilitate trade in raw materials and for industrialization requiring importation of plant, machinery and equipment, crude oil export in post-

independent Nigeria) and Political influence e.g. development of Koko port less than 200 miles from Warri and Sapele and the dredging of Port Harcourt port at the expense of Calabar port, the building of the new Calabar port in spite of sand silting from the Cross River (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

The Nigerian ports system is organized in such a way that the Ports Authority called the Nigerian Ports Authority (NPA), which was set up by the Ports Acts of 1954 (as amended subsequently) now controls 8 major ports excluding oil terminals namely Apapa, Tincan Island, Roro (Lagos), Port Harcourt port, Delta port (Warri), Calabar Ports, Container Terminal (Lagos), Federal Lighter Terminal (Onne) and Federal Ocean Terminal (Onne). Their berthing facilities include 93 general cargo berths, 5 Roro berths, 7 bulk solid cargo berths, 11 bulk liquid cargo berths, 63 buoy berths and there are other privately owne jetties. Their cargo storage facilities comprise 63 transit sheds, 22 back-sheds, 4 arcon sheds, (40 warehouses all with a total area of 460,459 square metres), 37 operational harbor crafts, over 550 different types of cargo handling plants and equipment. Until 1954, it was the Marine unit of the Nigerian Railways that controlled the ports which included ports privately owned by some multi-national companies including John Holt, UAC, Elder Dempster and C.F.A.O (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

Many of the present ports are administered by NPA under a service (operating) ports system where NPA provides both the infrastructure and super-structure in the ports system and carries out the functions of pilotage, stevedoring, warehousing and cargo-delivery whilst few of the ports like Federal Lighter Terminal (Onne) is partially a Landlord port

where NPA provides the infrastructure and the private sector operators provide the super structure (like plants and equipment cargo discharge, delivery, pilotage, stevedoring etc.). There are other ports at Gwette, Bonny, Brass, Sapele, Akassa, Degema, Okrika. It is noteworthy that because the Nigerian ports system had not yielded the expected efficiency, convenience and cost of advantage, reformas are beign urged and introduced from time to time so as to overcome the problems associated with it some of which arise from time to time (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015). The following are problems associated with the Nigerian ports systems.

2.4.3.1. Malfunctioning port system

Even though there has been rapid economic development, yet because Nigerian ports system is static and malfunctioning, there arises ports congestion and disruption of the production activities of the economy. In 1975, there were serious port congestion problems in Nigeria popularly known as "the Cement Armada" which had a negative multiplier effect locally and internationally on the Nigerian economy. At that time, up to 450 ships were waiting for up to 180 days to berth (when the internationally accepted lay time is 10 days) and yet in the year 2001 (26 years after, lasting for some months after it started in May 2001), the Nigerian port's system faced a similar problem that brought its malfunctioning nature into fore (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

For months from about May, 2001 Nigerian's busiest ports of Apapa Container Terminal, Roro Terminal and Tincan Island within Lagos State had a situation where as a result of the Federal Government's introduction of 100% physical inspection of cargo and attendant penalties for concealment or under-declaration or under-valuation of imported

cargo, vessels were waiting longer than usual to berth, there was inadequate space to unload cargo due to ports "bunching" that was leading to ports congestion because of importers' failure or neglect to come forward and clear their cargo from the ports. This almost grounded the Nigerian economy to a halt with the delayed berthing of vessels carrying imported raw materials and equipment for manufacturers and government parastatals and the non-clearing of discharged cargo, lack of space for empty containers and inflation due to scarcity of imported consumer goods. Many of the importers are not able to locate where their have been block-stacked, thereby hampering the quick clearing of their cargo in order to make room for the discharge of in-coming cargo and has caused undue delays, over-time port charges and increased prices of goods. Equipment ordered for the Abuja Emergency Power Project to take off and for National Electric Power Authority to meet its December, 2001 deadline for regular power supply were also reported held up at the ports due to the problem. Some of the adverse effects the ugly situation had on the Nigerian economy are that the Lloyds of London and the liners threatened to increase the freight rates on cargo being shipped to Nigeria which would upon implementation increase the cost of imported goods and inflation (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

Moreover, the "bunching" problem was partly due to the ports' management not changing its style in view of the high volume of business, which arose form a change into a democratic government. It is noteworthy that during the regime of Sani Abacha, Nigerian was a pariah nation, which many countries did not want to do business with thereby leading to under-utilisation of ports capacity causing the ports management to lease spaces to private entrepreneurs like Dangote, Wasa

Delmas etc. However, the volume of business at the ports sharply rose after the 4th Republic was born in May 1999 thereby causing the ports to be faced with shortage of space to stack containers in the face of the neglect or refusal or unwillingness of consignees and their agents to claim their goods in response to the new Government policy of 100% physical examination of goods by Nigerian custom service (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.2. Government's Intervention and interferences

Related to the above problems in the Nigerian port system are the intermittent sudden interventions of the Federal Government in the Nigerian ports systems. Granted that since the port authority (NPA) is a federal government parastatal, its performance is of immense interest to the economy and government because of its influence on the economy, yet the federal government usually reacts to unnoticed developments in the ports systems through ad-hoc or "fire brigade" and "kill and go methods" methods. The government usually takes or implements measures without having fully considered their effects or likely effects on the maritime sector and the other modes of transport even though they are in areas relating to the ports system. For instance around 1977/78, the then Obasanjo's military regime introduced "austerity economic measures" whereby the importation of certain luxury goods were banned or restricted thereby leading to under-utilisation of the ports facilities. During the military regime of Gen. Sani Abacha, his policies ostracized Nigeria from the international community leading to a depressive Nigerian economy and the leasing out of ports' facilities and spaces to private organisations which situation has contributed to the present problem of "bunching" at the ports (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

Moreover, in the face of massive imports due to the new democratic civilian government the ports got busy again. However, government intervention around May 2001 by suddenly introducing 100% physical examination of all imports, imposing not less than 50% penalty on, or auctioning goods of importers who conceal or undervalue their imported goods for the purpose of paying little or no customs duty so as to enable the federal government collect the requisite customs duties as part of the much needed revenue for economic development (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

Such "fire brigade" and "kill and go" approaches of the government in introducing the 100% physical examination at a time when the Nigerian Customs Services that had been under operating under the statutory pre-shipment inspection method of examination of imported goods was not adequately prepared for its implementation with equipment and personnel as not to delay the clearing of goods from the ports and the failure or neglect of the cargo receivers to come forward and clear their goods for fear of being penalized or incriminated, led to "bunching" and adversely affected the Nigerian economy. In a bid to quickly move goods out of the Apapa and Tin Can Island ports in May – July 2001 and in the absence of a working rail connection to these ports, only the transportation of goods by road in trailers was possible which created serious traffic hold-ups in Apapa and its environs and put strenuous pressures on the road networks thereabouts, frustrated commuters and slowed down economic activities (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

In August 2001, the Federal government through the Nigerian Customs Service yet again in the in the ports system by introducing or

implementing a regime of harmonized import duties on fairly-used vehicles known as "Tokunbo" based on the ex-factory prices of the vehicles and uniform assessment standards at all port ports in Nigeria and because of the belief that importers of such vehicles under-value their prices in order to pay Customs duties. For two days (13^{th} – 14^{th} August 2001), business activities at the TinCan Island and RoRo ports, Lagos were disrupted as a result of protests and strikes by freight forwarded against the implementation of such policy (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.3. Inadequate infrastructural facilities for efficient and fast services

It is noteworthy that vessels make money when they are on the move and that the time spent on discharging and handling cargo carried by vessels cost the vessels' owners money on the crew, port charges, vessels' running etc. and so the less delay in turn around time (i.e. time to berth, unload cargo, load any new cargo and leave the port), the better for the vessels since whilst delayed or working at ports, the vessels are accumulating heavy costs as much as between 5,000 to 10,000 US dollars per day depending on the size of the vessel. As at December 1999, plants and equipment at Nigerian ports were 585 and even with the purchase of 4 new container handlers, 18 tractors, 6 container handling equipment. Compared with the new number of ships berthing and the volume of cargo needing discharging, there has little improvement on the efficiency and productivity of the NPA in meeting the IMO's stipulation of clearing cargo within 48 hours (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Gigado, 2015).

The situation in Nigerian ports is such that cargo handling equipment and plant are either old, malfunctioning or broken down or inadequate thereby

slowing down cargo discharging and stacking and clearing operations, leading to low throughput, longer turn around time, inefficiency, damage to or loss of cargo, high port charges and demurrage and the encouragement of corruption at the expense of shippers, port operators and cargo receivers. These factors all make Nigerian ports user-unfriendly and unattractive to some liners, shippers and importers who therefore prefer berthing at neighboring ports especially Cotonou port to berthing in Nigerian ports (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

There is also a lack of intermodal transportation that would have enabled discharged cargo to be quickly removed from the ports through other means of transportation like rail and road being well connected to the ports into the hinterland. The present situation is that rail routes to and from the ports are not being used and the roads to and from many of the ports are traffic congested thereby causing unnecessary delays in the evacuation of discharged cargo from the ports and its environment (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.4. Complicated Tariff Structure and Implementation

Another problem associated with the Nigerian ports system is the complicated tariff structure and its implementation. The NPA is statutorily empowered to inter alia provide facilities for berthing, towing, mooring, loading, unloading of goods, embarking or disembarking of passengers or goods, for which it is entitled to charge harbor dues on all ships calling at its ports and using the facilities. The port charges collected are for the maintenance and improvement of the ports' infrastructure and superstructure by the federal government through the NPA. However, the general notion of port charges in Nigeria being too

high compared with port charges in its neighboring countries, had caused the neighboring ports especially Cotonou in Benin Republic to be used by shippers and liners at the expense of major ports like Apapa and Tin Can island ports, Lagos. This causes Nigerian ports to be uncompetitive with its neighboring ports in the region and to lose business to them (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

In addition to this, are the prohibitive, duplicated and multifarious local handling charges or local charges or shipping agent's releasing charges imposed by multinational shipping agents in Nigeria which have put a lot of costs on the Nigerian cargo receivers and shippers thereby making costs of exports and imports to be too high. The documentation procedures for these payments and clearing of goods are also unnecessarily prolonged. Efforts by the Nigerian Shippers' Council to regulate these handling charges and eliminate duplicated ones by promulgating the Nigerian Shippers' Council (Local Shipping Charges on Imports and Exports) Regulations, 1997 appear to have failed notwithstanding the court cases on them filed in 1997 (to redress the bad situation upon a general outcry by port users against the high cost of using Nigerian ports) and which were settled out of court (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.5. Misunderstanding of the usage and current function of ports

Nigerian ports system is associated with the problems of being seen as serving a storage function when the current trend is that ports now perform transitory function. After the unloading of their cargo from vessels, a lot of consignees choose to leave their cargo within the ports whilst they look for buyers of such cargo, especially vehicles. The secured buyers then pays the customs duties and any overtime charges

and clears the cargo out of the port. Whilst waiting for buyers, their cargoes are stored in the ports unnecessarily occupying scarce spaces in the ports and leading to avoidable "bunching" and economic problems (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.6. Proliferation of government agencies operating at the ports

There is also the problem of numerous government agencies operating at the ports. Different agencies have been brought into the ports to take ad hoc measures and different regulations have been made to impede ports' operation in the name of ensuring security, standardization, environmental protection, fake drugs etc. There are up to 32 government agencies including NDLEA (Nigeria Drug Law Enforcement Agency), Nigerian Customs Service, FEPA (Federal Environmental Protection Agency), NAFDAC (National Agency for Food and Drug Administration), SON (Standards Organisation of Nigeria), all of which cause avoidable delays in the clearing of goods and induce diversion of cargoes to neighboring ports. It is suggested that in order to remove the bottlenecks, the number of government agencies at the ports should be reduced to only those required for effective ship and cargo handling operations and national security and whose presence at the ports are not duplicative of the functions of the main government agencies (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.7. Cumbersome documentation and delivery procedure

The Nigerian ports system is hampered by cumbersome documentation and delivery procedure. Although the notorious Customs Long Room has now been "shortened" and renamed Customs Processing Centre, the absence of reliable up to date data and the elongated documentary and delivery procedures that induce the involvement of numerous persons

cause avoidable delays in cargo discharges, delivery and receipt. Delays are also caused by either late arrival of documents, faulty documents and outdated documentation requirements and processing methods. Associated with this problem are the sharp practices and high levels of extortions by government agencies at the ports (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.8. Insecurity of cargo and lives

Another problem associated with the Nigerian ports system is insecurity of cargo and lives. The so-called "Wharf rats" vandalise or steal valuable parts of imported vehicles awaiting clearing or goods from containers after removing their seals and pirates carry out attacks at the ports of Warri and Onne because of the use of lighters to transport cargo from vessels to the terminals. There are many people without business in the ports that are loitering at the ports and soliciting for "business" only to engage in criminal activities within the ports (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.9. Manpower and Labor problems

There is inadequate well-trained manpower including dockworkers due to lack of the training of port personnel and maritime labor force as specialists able to handle modern sophisticated cargo handling and delivery equipment. There are few workers with the managerial ability to manage the ports and their operations in the new trend of globalization of ports services. There are usually disputes between dockworkers, clearing agents and port managements often leading to strikes crippling port operations and the economy (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.10. NPA's Lack of Financial Autonomy

The absence of financial autonomy in NPA is one of the problems associated with Nigerian ports system. NPA is a federal government parastatal and statutory agency 100% shares capital in which are owned by the federal government. It seems to be making a lot of money for its sole shareholder but it does not have access to the funds for spending except as appropriated in national annual budgets. It is also not independent of the federal government or the supervising ministry (Federal Ministry of Transport). This makes for government interference in its activities (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.3.11. Port Environmental Pollution Problems

Environmental impacts and pollution of the marine environment have become crucial considerations in not only port development but also port operations and management the world over which are now regulated by international conventions and since Nigeria is a coastal state member of the internal community, its case cannot be different. Some of these conventions are the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters in force since 1975, MARPOL 73/78, SOLAS, Oil Pollution Preparedness, Response and Cooperation in force since 1990 (making it mandatory for ports to have oil pollution plans coordinated within a national contingency arrangement), UN Conference on Environment and Development, 1992 (recommending assessment of environmental impact in project planning, port reception facilities, contingency plans for oil and chemical spills and systematic recording of the state of the marine environment). The United Nations Convention on the Law of the Sea, 1982 to which Nigeria is a party imposes some duties on Nigeria (as a coastal state) and its ports in respect of the pollution of the marine environment from sea-bed and land-based

and vessels' activities and disposition of shipboard waste and garbage through reception facilities. The problem is that either Nigeria is yet to ratify the conventions or has ratified but has not yet domesticated them or has domesticated but has not yet been implementing the municipal laws on the conventions concerning marine pollution, thereby exposing its environment form been affected by them (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

Nigerian ports thus stand great risk of facilitating pollution of the Nigerian marine environment through the toxic and noxious harmful substances or energy from oil/chemicals, oil exploration and exploitation because of the fact that Nigeria is a major oil producing country whose ports are used in the process of loading, transportation and unloading of crude and refined oil cargoes and the accidental discharges associated with tankers' collisions. Port environmental pollution can therefore be caused by maintenance dredging (of toxic materials), maintenance of superstructure and equipment, development of ports infrastructure, maintenance repairs to ships and ports' industrialisation, cargo handling and storage, discharges from ships including ballast waters, shore-based transport operations (i.e. port/city interface) and accidents involving vessels carrying dangerous substances occasioning spillages at ports (Michael, 2001; Innocent 2011, Akaso *et al.*, 2011; Bariweni *et al.*, 2012; Gigado, 2015).

2.4.4. SAFETY ASPECT OF MARITIME TRANSPORT

Boat mishaps tend to be on the increase in Nigeria in spite of all regulatory measures, which have been taken to prevent and control marine accidents. About 21 boat accidents have happened between 2005-2013, which has led to the death of 959 individuals involved (Dogarawa, 2012; Premium Times 2013).

2.4.4.1. CAUSES OF MARINE ACCIDENTS IN NIGERIA

Both human and technological factors are involved in boat mishaps. Some of which are: Overloading of boats; Bad weather condition; Poor Pilot services; Boating under the influence of alcohol/drugs (Dogarawa, 2012; USCG, 2013).

2.4.5. SECURITY ASPECT OF MARITIME TRANSPORT

Piracy, kidnapping and armed robbery are big issues in the Nigerian Maritime industry (Onuoha, 2012; defenceWeb, 2012; Lambrechts, 2008).

2.4.6. ENERGY CONSUMPTION

In Nigeria, Ten per cent (10%) of the fuel oil consumed and six per cent (6%) of the automotive gas oil consumed go to water transportation (Badmus *et al.*, 2012).

2.4.7. EMMISSIONS

Exhaust emissions from ships are considered to be a significant source of air pollution, with 18 to 30 per cent of all nitrogen oxide and 9 per cent of sulphur oxide pollution. The 15 biggest ships emit about as much sulphur oxide pollution as all cars combined (Abowei, *et al.*, 2011).

2.4.8. NOISE POLLUTION

Noise pollution caused by shipping and other human enterprises has increased in recent history. The noise produced by ships can travel long distances, and marine species that may rely on sound for their orientation, communication, and feeding, can be harmed by this sound pollution.

The Convention on the Conservation of Migratory Species has identified ocean noise as a potential threat to marine life (Abowei *et al.*, 2011).

2.5. URBAN TRANSPORT

Studies in the area of urban transportation confirmed that more than 75% of population in cities depended on public transport while about 25%

depended on private transport system. The socio-economic variables of Nigerians contributed in no small measure to this pattern. Public transport system, which is an aspect of the country's transport sector, had all along been in the hands and control of Nigerian private entrepreneurs. Thus, the private owners dictated largely the modus operandi of the nations public transport system. In the early 1960s, the macro-economic indicators, which are yardsticks for measuring all aspects of the growth of Nigeria' s economy, were consistently positive. This was because the nation depended much on agricultural products for its foreign exchange earnings and a low proportion of the population were engaged in white-collar jobs. During this period, a number of private individuals owned private vehicles, which they used for both intra and inter-urban movements. The use of public transport for intra-urban movement purposes were largely concentrated in large cities like Lagos and Ibadan while commuters contend with the use of trekking within smaller towns as at 1960. The situation however changed drastically today, as the commuting distances in towns and cities have increased (Ogunbodede, 2008; Ogunbodede, 1990; Ogunjumo, 1986; Okpala 1981; Mrakpor, 1986).

According to Ogunsanya (1993), there were 6,822 vehicles in Nigeria by 1946 made up of 4,702 re-licensed and 2115 new ones. The figures soared to 20,440 by 1950 made up of 14,200 re-licensed and 6,240 new ones. The vehicle stock grew gradually from this time up to 1970 when it shot up astronomically. This period coincided with the period of rapid urbanization although a period of doldrums was experienced during the period when Nigerian was engulfed in the civil war (1966-1970). After 1970, it became clear that there was going to be an automobile explosion in the cities of Nigeria. This is because vehicle stock rose sharply from a modest 100,268 vehicles in 1970 to 1,009,797 in 1977. Unfortunately, the

roads constructed then were unable to accommodate the increased vehicle at such a rapid speed. Thus, the problem of immobility in Nigeria cities started to unfold itself.

The nation, beginning from 1979, plunged into an abrupt economic depression, which was part of a global one. Adeyemo (1995), reporting on the very low to negative growth rates of key macro-economic indicators during this period explained that the country on the external side witnessed negative account balance while internal imbalances were manifested in the high inflation rate, high level of unemployment and low level of capacity utilization. This situation led to the adoption of structural adjustment policy (SAP). The SAP created more problems than solution. This was done because the choice of instrument and the implementation created side effects that inhibited sectoral growth particularly in the transport sector, which was not only capital intensive but also import dependent. The exchange rate continued to fall. For example, it fell from $1.00 to N1.5 in 1993; $1.00 to N88.00 in 1994, $1.00 to N115.0 in year 2000 and $1.00 to #120 in year 2005. It became difficult to import vehicles and spare parts and when they were imported at all cost, they were done at a very prohibited cost. Similarly, the cost of locally manufactured vehicles went up and vehicle-manufacturing companies closed up e.g. Volkswagen of Nigeria (VON) (Adeyemo, 1995; Ogunbodede, 2008).

The period between 1985 and 1998 was particularly difficult for Nigerians as the standard of living became very low. This was the period when Nigerians could hardly take three meals in a day. Hence buying of vehicles for whatever purposes was not considered as being in the priority. New vehicle registration therefore fell drastically in the country

while many old vehicles quit the road. For example, vehicles declined from 700,000 vehicles in 1983/84 to under 500,000 in 1987. This fall was projected to continue to decline to 350,000 in 1991 (Ogunsanya, 1993). Unfortunately, as the vehicle stock in the country continued to decline, population continued to rise, while disposable income continued to fall. The situation continued to approach crisis stage when government decided to set up a task force to look into urban transportation problems with a view to proffering solutions.

The public, in reacting to the high cost of buying new vehicles, resulted to buying used vehicles. Thus, used buses, and cars were imported from overseas and people started buying them. According to Federal Office of Statistics (FOS) 1997, there was a drastic increase in the vehicles registered between 1995 and 1996. The vehicles newly registered dropped from 57,883 in 1994 to 57,471 in 1995 and picked to 97,371 in 1996 while the provisional data for 1997 stood at 1,081,933, other means by which new vehicles were increased in the country was through Federal Urban Mass Transportation and Government parastatals that acquired vehicles through their annual subventions (Adeyemo, 1995; Ogunbodede, 2008).

Government Policies in the Area of Urban Road Transport System Development The Federal Government of Nigeria recognized that the development of road transport is essential to the growth of the economy and for this purpose, 13.1%, 15.8%, 19.0% and 12.7% of the total gross capital expenditure from 1955 to 1959 was devoted to road transport. Since then, the first, second, third and fourth National Development Plans (1960-68; 1970-74; 1975-80) also had more than 25% of the total allocation to Development Plans devoted to road transport sector while

allocations to rail was declining. The preference of Government to the provision of road transport infrastructures later influenced the provision of transport services not only in the urban centers but as well, as inter urban services (Ogunbodede, 2008; Effiom and Ubi 2016).

Initially large private companies dominated the provision of transport services and these were mainly inter- urban. As at independence, the list of selected Nigerian road transport common carriers were sixteen. The vehicles specialized in the haulage of agricultural products, petroleum products, mails and to some extent passengers. Most of the vehicles used are trucks and very few passenger buses. Of the 16 road transport common carriers, ten of them service Lagos and other parts of the country. Shortly after independence, most towns in the country grew in area extent to a level that trekking within such towns became very inefficient and inadequate. Attempts at increasing the stock of private vehicles to provide transport services for commuters became inevitable. Apart from individuals' contribution, the government was also involved in the provision of public transport services (Ogunbodede, 2008; Effiom and Ubi 2016).

The Nigerian government set up a task force to look into the urban transportation problems and proffer solutions. The task force gave birth to Mass Transit Implementation Committee, which recommended among other things provision of buses, spare-parts and other transport complimentary facilities for Nigerians. The introduction of the Federal Urban Mass Transit Programme (FUMTP) ushered in a number of policies that made the Mass Transit a success. Such policies include monitoring and providing guidelines on Nigeria's urban transport system. It also looked at the aspect of rehabilitation of some locomotive and

coaches for the commencement of intra-city rail services, as well as rail terminals and stations within Lagos Metropolis (Ogunbodede, 2008; Effiom and Ubi 2016).

The policy also ensures the rehabilitation of ferries of the inland waterways as well as providing standard maintenance workshop for all different cadres of middle and high-level manpower in the state; similarly, seminars/workshops to review problems relating to urban transportation were largely undertaken. All these policies not withstanding, the mass transit faced many problems. The management of the state mass transit agencies became deplorable and almost all the state agencies ran at a loss. The urban mass transit, which was conceptualized to provide intra-urban transport services at the point of introduction, could not break even in all the medium sized cities because of lack of threshold population to sustain patronage. This made them to shift their mode of operation from intra-urban services to inter-urban services except, in places like Lagos Port Harcourt where the threshold population that could survive such operations were present. However, the peak periods became chaotic with hold-ups at the slightest inhibition on the road, hence government workers get late to offices and homes in the morning and afternoons respectively (Ogunbodede, 2008; Effiom and Ubi 2016).

One-way by which the public responded in beefing up supply of public transport was the use of motorcycle as means of urban transportation. Although, this system was not completely new in Nigeria as Edo, Rivers Akwa-Ibom and Cross River States started its use long time ago because of the riverine terrain nature of their states. The waterlogged nature of the area made the construction of road costly hence; very few areas were

actually networked. Apart from this, the use of motorcycle for public transport system was common in the dispersed settlement of Eastern part of the country where it was first accepted as a public mode for inter- rural and rural-urban movement. According to Ogunsanya and Galtima (1993) the general acceptability and use of motorcycle for intra-urban mobility in Nigeria started during the Structural Adjustment Policy (SAP) of the government with its very stringent attributes (Ogunbodede, 2008).

It can be argued, therefore that since the Federal Urban Mass Transit and Taxi Cabs were unable to provide adequate intra-urban transport services to sustain multi-various urban activities, other smaller transport system (in this case motorcycle i.e Okada) were on ground, which commuters had to adapt and adopt to satisfy intra-urban movement. This was because it was only natural for the people to convert their personal motorcycle for public uses in response to reality of commuter' s need. Similarly, personal vehicles of some individuals were used for commercial purposes called Kabukabu. The civil servants who engaged in this type of business do it after working hours or before going to work. With time, the Okada system survived the test of time, because junior workers who constitute the majority of Okada riders prefer it to public passenger transport system, which had failed to alleviate the intra-urban movement problems of most of the city commuters. It was therefore only natural for the people to convert their personal motorcycle for public commercial transport system to complement the existing public transport system, which was largely inadequate and to generate additional personal income due to the effect of the Structural Adjustment Policy (SAP). Thus, the genesis of the use of motorcycles and private vehicles as a public transport system on a large scale arose out of the economic woes of 1980's (Ogunbodede, 2008).

2.5.1. CONSTRAINTS TO THE DEVELOPMENT OF PUBLIC TRANSPORT IN NIGERIA

The general downward in Nigeria nation's economy which was part of the global depression of 1980' s affected all sectors in which transport system was one of them. Majority of Nigerians living in cities felt this impact more than those in the rural areas. This was because the commuting distance of people in cities increased considerable than it used to be before 1980 as stated earlier. This example shows that it was becoming increasingly difficult and inefficient to trek in cities because of the area expansion of the city. The glut of 1980 further compounded the mobility problems of commuters since most of the commercial vehicles in cities went off the road because of poor servicing and lack of spare parts. The Structural Adjusted Programmes (SAP) of the federal government further compounded the importation of vehicles and spare parts such that the shortfall in public transport had to be augmented by interested private individuals in different forms (Ogunbodede, 2008; Effiom and Ubi 2016).

Rapid urbanization of cities in the country was a continuous process because of the State creation, which had earlier on been mentioned. However, it became a problem when the rate of growth of the urban population exceeded the capacity of the transport infrastructure and services meant to provide solutions to movement in cities. All the cities in Nigeria have no records of immigrants and emigrants into them. The populations of such cities are not known outside the ones given by census, which comes up periodically. Thus, it becomes a problem to plan without figures and facts. Most planning managements that were carried out in urban areas depended on projected figures of population, which also relies on census figures that many international observers regard as

being far from the truth because of exaggerations, which were built into them (Ogunbodede, 2008; Effiom and Ubi 2016).

Public participation in transport delivery can be said to be profitable, otherwise none of them would continue to provide these services. On the other hand, it has not been so with Government participation. Evidences available from empirical studies carried out (Odeleye, 2004; Ogunsanya, 1995; Onakomaiya, 2002) showed that state mass transits were run at a loss. The reasons include nonchalant attitude to government work by the employees; embezzlement on the part of drivers and conductors, and inadequate response to taking immediate actions on repairs and services of vehicles by government parastatals established for such purposes.

The attitude of some professional drivers also scares private investment in the area of transport service delivery. Some private rich individuals who were interested in investing in public transport system because it was a lucrative business decided not to do so, because most drivers were found to be insincere and economic with the truth. This is because vehicles given to them are often run at a loss whereas; they break even when they run them on their own. These experiences as noted in the past made would-be-investors to leave these areas of investment to the drivers. The drivers on the other hand have no financial wherewithal to buy vehicles except they buy through the hire-purchase system. This however limited the number of people going into public transport business (Ogunbodede, 2008).

The role played by the Nigerian Union of Road Transport Workers (NURTW) in allowing investors to invest in public transport system still remain as an obstacle to private individuals. The union, in addition to

registration fees also collects different types of daily fees, which reduces and sometimes renders the profit margin of the owner of such vehicle to nothing. This is because, the driver would buy fuel, engine oil, eat, pay the conductor and himself before thinking of remitting the rest to vehicle owners. Thus, it pays the professional drivers to invest in public transport system than private investor who will still need to hire the services of a professional driver (Ogunbodede, 2008; Ayinla, 2013).

2.5.2. URBAN TRANSPORTATION PROBLEMS IN NIGERIA

Nigeria is one of the countries in the developing world with rapid urbanization and fast growing cities. A study of the changing morphology of many Nigerian cities gives an insight into the evolution of urban transport problems in Nigeria. Most of the scholars who have worked on urban transport problems in Nigeria have identified congestion as the most serious. Congestion occurs when transport demand exceeds transport supply at a specific point in time and in a specific section of the transport systems. Under such circumstances each vehicle impairs the mobility of others. It is now a common feature of most urban centres of Nigeria and most especially Lagos, Ibadan, Port Harcourt, Enugu and others which are commercial and industrial nerve centres of the country, having the most problems (Aderamo, 1998). The problem of traffic congestion in cities of Nigeria has its roots partly in the structural pattern of the roads especially in the traditional area of cities and the unplanned growth and haphazard land-use distribution (Aderamo, 2012; Adetunji, 2014; Odum and Aloba, 2014; Adedotun, 2015).

Associated with the traffic congestions are problems of parking. Parking demands far outweigh the available supply in most Nigerian cities (Kombs, 1988). This results in road-side parking and illegal parking,

which are common features in urban centres of Nigeria. The ineffective regulation on parking has further worsened the situation. Also, since vehicles spend the majority of the time parked which has created land consumption problems particularly in the Central Business Districts (CBDs). Unfortunately, the more parking facilities provided, the greater the demand for parking since there is continuous increase in motorization (Ogunbodede, 2004).

Accidents frequently occur on roads in Nigerian urban centres. Urban environments are the most prone to motor traffic accidents because 75 per cent of traffic accidents take place in built-up areas or cities (Aderamo, 2002). This is due to the underlying factors of undue concentration of vehicles in urban areas, traffic mix and the resultant flow conflicts. Most of these accidents happen due to the general impatience and ill-tempered nature of road users and the conflict between pedestrians and the different means of road transport in the cities (Ogunsanya, 1993; Aderamo, 2012; Adetunji, 2014; Odum and Aloba, 2014; Adedotun, 2015).

Environmental pollution and noise pollution have also been identified as one of the urban transport problems in Nigeria. This is as a result of discharge of effluents and emission from automobiles. Pollution, including noise generated by circulation is a serious impediment to the quality of life and even health of urban population. Further, energy consumption by urban transportation has increased and so the dependency on petroleum. The major pollutants include carbon monoxide, lead, nitrogen and hydro-carbons which are significant sources of eye and respiratory diseases. The increasing number of old and poorly maintained vehicles on Nigerian roads makes the pollution effect to be more serious. Land consumption is also a significant transportation

requirement especially for the automobile. In addition to the transport routes, substantial requirements are also needed for car parking and for terminals or interchanges (Aderamo, 2012; Adetunji, 2014; Odum and Aloba, 2014; Adedotun, 2015).

As a matter of fact, urban transportation in Nigeria is largely an unregulated market and small scaled. The urban transportation problem arises principally because of high concentration of population, economic activities, and educational and social facilities in relatively small areas, particularly with poor land use planning. These activities generate demand for transport services far in excess of supply of such services (Aworemi *et al.*, 2009; Innocent, 2011).

The technology used is of a combination of Para transit modes, consisting of shared taxis, mini-buses, motorcycles and tricycles locally known as kekenapep. Only in the cities of Lagos and Abuja are conventional buses in use similar to what obtains in most cities worldwide; but even in both cities the use of Para-transit modes of transport is clearly dominant (Basorun and Rotowa, 2012). Therefore, Nigeria remains the only country in the world where densely populated cities with over 6 million people do not have an organized urban transport system based on a combination of conventional buses and rail (Okanlawon, 2007; Innocent, 2011; Aderamo, 2012; Sumaila, 2012; Adetunji, 2014; Odum and Aloba, 2014; Adedotun, 2015).

2.6. RESEARCH RATIONALE

One of the major challenges faced by Nigeria is the overall improvement of its transport sector. The analysis of the Nigerian's transport system so far, indicates a warped modal development tilted in favour of the road.

The road is responsible for about ninety per cent (90%) of both freight and passenger transport, which has led to an unprecedented level of congestion on the roads, traffic crashes, armed robbery attacks (Stephen *et al.*, 2012). While other public transport modes such as water and rail are under-utilized, restricting the development of an integrated transport system (Okanlawon, 2007; Odum and Aloba, 2014; Adedotun, 2015; Effiom and Ubi, 2016).

Experience has also shown that the performance of urban transport service delivery in Nigeria is low; policymakers have incomplete information to make decisions; managers and professionals rarely have a clear picture of their operational performance or the desired performance level of their service provision. The poor performance of urban transport can become a major impediment to achieving access, mobility objectives and economic growth (Obot *et al.*, 2009; Innocent, 2011; Sumaila, 2012; Odum and Aloba, 2014; Adedotun, 2015).

Due to the heavy dependence on the road transport system, imbalance in the Nigerian transport system and existing challenges facing the Nigerian transport sector (Odum and Aloba, 2014; Adedotun, 2015; Effiom and Ubi, 2016), it is therefore necessary to adopt the benchmarking technique (which according to Andersen and Pettersen (1996), "is a powerful tool for improvement") into the sector and use it as a tool to assess the potential for enhancing a better performance of the road transport system, improving intermodality and reducing friction costs between different modes. Thus also promoting better use of alternatives to unimodal transport services (Richard, 1999).

SUMMARY

This chapter has presented a general overview of the Nigerian transport sector, which comprises of Road, Rail, Air and Water transport sub-sectors and the various challenges facing the transport sector, which has lead to the research rationale. The need for benchmarking has been emphasised hence it is necessary to find out what benchmarking is and the process, this leads to an overview of benchmarking and Key performance indicators which is presented in the next chapter.

CHAPTER 3 – KEY PERFORMANCE INDICATORS AND THE BENCHMARKING TECHNIQUE

3.0. INTRODUCTION

This chapter presents an overview to Key Performance Indicators (KPIs) and the Benchmarking Technique. The KPIs identified and developed for the Nigerian transport sector, which were used in the survey and case studies of benchmarking were presented. Also presented in this chapter is an overview of transport in the United Kingdom and why it has been chosen for the benchmarking.

3.1. OVERVIEW OF KEY PERFORMANCE INDICATORS (KPIs)

Key Performance Indicators (KPIs) are quantifiable measurements, agreed to beforehand that reflect the critical success factors of an organization, they help an organization define and measure progress toward organizational goals. Once an organization has analysed its mission, identified all its stakeholders, and defined its goals, it needs a way to measure progress toward those goals. Key Performance Indicators are those measurements (Henning *et al.*, 2011).

Whatever Key Performance Indicators are selected, they must reflect the organization's goals, they must be key to its success, and they must be quantifiable (measurable). Key Performance Indicators usually are long-term considerations. The definition of what they are and how they are measured do not change often. The goals for a particular Key Performance Indicator may change as the organization's goals change, or as it gets closer to achieving a goal (Henning *et al.*, 2011).

Key Performance Indicators will differ depending on the organization.

*A business may have as one of its Key Performance Indicators the percentage of its income that comes from return customers.

* A human resource department may focus its KPIs on new employee satisfaction rate with recruiting process, percentage of new employee retention after x time, etc. (Iveta, 2012).

*A school may focus its Key Performance Indicators on graduation rates of its students.

*A Customer Service Department may have as one of its Key Performance Indicators, in line with overall company KPIs, percentage of customer calls answered in the first minute.

*A Key Performance Indicator for a social service organization might be number of clients assisted during the year.

*The health sector may focus its KPIs on patient outcomes and patient/family satisfaction, safety of patients and staffs etc. (Igal, 2003).

*The construction industry may focus its KPIs on, speed of construction, accident rate, environmental impacts, client satisfaction, etc. (Albert and Ada, 2004).

*The transport industry may focus its KPIs on environmental impacts, safety, travel time, cost of travel, etc. (Henning *et al.*, 2011).

A couple of transport KPIs like the ones mentioned above have been developed and identified by some countries in Europe and North America (Henning *et al.*, 2011; Hilmola, 2011; Paul, 2011). However they are yet to be identified in Nigeria and also, there is a level of uncertainty as to whether those KPIs developed and identified in other countries will be applicable to Nigeria. Therefore, it is necessary to develop or identify KPIs that will be applicable to the Nigerian transport sector for a successful and effective benchmarking.

KEY PERFORMANCE INDICATORS (KPIs) IDENTIFIED AND DEVELOPED FOR THE NIGERIAN TRANSPORT SECTOR

Based on existing body of work on the existing situation of the Nigerian transport sector (Alo, B.I. 2008; Ogunbodede E. F. 2008; Adesanya, A. 2010; Akaso, A. A., Bariweni, P. A. and Abowei, J. F. N. 2011; Sumaila, A.G.F. 2012; Aderamo, A.J. 2012d; Akpogomeh, O.S. 2012; Akpan, A.O., Obisung, E.O. and Asuquo, U.E. 2012; Ladan, S.I. 2012; Amba, D.A. and Danladi, J.D. 2013; Adetunji, M.A. 2013) and a pilot survey, a credible number of KPIs have been identified and developed for the sector. Presented in the following tables are some of the KPIs that been identified and developed for the Nigerian transport sector, which were used for the survey. The pilot survey results have been presented in chapter five of this thesis.

3.1.1. ROAD TRANSPORT KPIs

TICKETING

Table 3.1. KPIs for Road transport Ticketing

Self service
Ticket office
Number of ticket booths
Efficiency of ticketing staff
Attitude of ticketing staff
Information provided by ticketing staff

MOTOR PARKS/BUS STATIONS/STOPS

Table 3.2. KPIs for /Motor Parks/Bus stations/Stops

Cleanliness and maintenance of motor parks/bus stop
Signage (easy to understand / clear and helpful)
Provision of information about service changes
Available assistance/Customer services
Toilet facilities
Refreshment facilities
Waiting rooms
Personal security in the motor parks/bus stop
Easy and accessible complaint handling and mechanism put in place
Facilities for car parking
Responses to emergency
Ease of connections with other modes of public transport
Assistance and information for disabled or elderly people at motor parks/bus stop
Accessibility of motor parks/bus stops
Personal safety in the motor parks/bus stops

VEHICLES

Table 3.3. KPIs for Road transport Vehicles

Cleanliness and maintenance of Vehicles
Comfort of seating space
Punctuality of vehicles (arrival and departure)
Temperature On-board
On-board facilities
Reliability of vehicles
Frequency of vehicles
Travel time
Assistance and information for disabled or elderly people onboard the vehicles
Accessibility of vehicles
Personal safety onboard
Personal security onboard
Journey comfort (smoothness of ride)
Personal security during evening/night
Accessibility during evening/night
Behaviour of Drivers and Conductors

3.1.2. RAIL TRANSPORT KPIs

TICKETING

Table 3.4. KPIs for Rail transport Ticketing

Self service
Ticket office
Number of ticket booths
Efficiency of ticketing staff
Attitude of ticketing staff
Information provided by ticketing staff

PLATFORMS AND STATIONS

Table 3.5. KPIs for Rail Platforms and Stations

Cleanliness and maintenance of train station
Signage (easy to understand / clear and helpful)
Provision of information about train schedules and platforms
Available assistance/Customer services
Toilet facilities
Refreshment facilities
Waiting rooms
Personal security in the station
Easy and accessible complaint handling and mechanism put in place
Facilities for car parking
Responses to emergency
Reliability of escalators/elevators at stations
Ease of connections with other modes of public transport
Ease of connections with other train services
Assistance and information for disabled or elderly people in station
Accessibility of station
Personal safety in the station

TRAINS

Table 3.6. KPIs for Trains

Cleanliness and maintenance of trains
Comfort of seating space
Punctuality of trains (arrival and departure)
Temperature On-board
Storage facilities
On-board information
On-board facilities
Reliability of trains
Frequency of trains
Travel time: Length of time the journey was scheduled to take (commercial speed/the travelling speed of trains)
Assistance and information for disabled or elderly people onboard the train
Accessibility of trains
Availability of staff in trains
Personal safety onboard
Personal security onboard
Journey comfort (smoothness of ride)

3.1.3. AIR TRANKSPORT KPIs

TICKETING

Table 3.7. KPIs for Air transport Ticketing

Self service
Ticket office
Number of ticket booths
Efficiency of ticketing staff
Attitude of ticketing staff
Information provided by ticketing staff

AIRPORTS

Table 3.8. KPIs for Airports

Cleanliness and maintenance of airports
Signage (easy to understand / clear and helpful)
Provision of information about flight schedules
Available assistance/Customer services
Toilet facilities
Refreshment facilities
Waiting rooms
Personal security in the airports
Easy and accessible complaint handling and mechanism put in place
Facilities for car parking
Responses to emergency
Reliability of escalators/elevators at airports
Ease of connections with other modes of public transport
Assistance and information for disabled or elderly people in airports
Accessibility of airports
Personal safety in the airports
Security control waiting and processing times
Luggage handling
Baggage waiting time

AIRCRAFTS

Table 3.9. KPIs for Aircrafts

Cleanliness and maintenance of aircrafts
Comfort of seating space
Punctuality of aircrafts (arrival and departure)
Temperature On-board
Storage facilities
On-board information
On-board facilities
Reliability of aircraft
Frequency of aircraft
Travel time
Accessibility of aircraft
Helpfulness of staff on-board
Personal safety onboard
Personal security onboard
Journey comfort (smoothness of flight)

3.1.4. WATER TRANSPORT KPIs

TICKETING

Table 3.10. KPIs for Water transport Ticketing

Self service
Ticket office
Number of ticket booths
Efficiency of ticketing staff
Attitude of ticketing staff
Information provided by ticketing staff

FERRIES/BOATS

Table 3.11. KPIs for Ferries/Boats

Cleanliness and maintenance of ferry/boat/ships
Accessibility of ferry/boat/ships
Punctuality of ferry/boat/ships (arrival and departure)
Frequency of ferry/boat/ships
Comfort of seating space
Temperature onboard
Personal safety onboard
Personal security onboard
Travel time
Onboard facilities
Helpfulness of staff onboard
Onboard information
Reliability of ferry/boat/ship
Signage (easy to understand/clear and helpful)
Journey comfort (smoothness of ride)

WHARFS

Table 3.12. KPIs for Wharfs

Cleanliness and maintenance of wharf
Signage (easy to understand/clear and helpful)
Personal safety at wharf
Personal security at wharf
Comfort at wharf (shelter and seating)
Availability of car parking near the wharf
Ease of connection with other modes of public transport
Being informed of service changes (e.g. delays)
Available assistance/customer services
Accessibility of wharf

3.2. OVERVIEW OF THE BENCHMARKING TECHNIQUE

Benchmarking is a powerful tool for improvement (Andersen and Pettersen, 1996). Interest in benchmarking has virtually exploded since 1979 when Xerox first introduced it (Camp, 1989; Andersen and Camp, 1995). Today benchmarking as a tool is widely used. It has spread geographically to large parts of the world and proliferated in a variety of manufacturing and service businesses, construction, health care, government and educational organizations (Camp, 1995).

Benchmarking has been given many different definitions by different organisations and authors even though each aims to reach the same conclusion (See Table 3.13). It has been defined by Camp (1989) simply as "the search for industry best practice that leads to superior performance". In other words, benchmarking is a process of finding what best practices are and then proposing what performance should be in the future. The three principles of benchmarking are maintaining quality, customer satisfaction and continuous improvement (Watson, 1993).

Table 3.13. Benchmarking definitions (Jay, 2007).

Authors	**Definitions**
Camp (1989)	The continuous process of measuring products, services and practices against the toughest competitors or those companies recognised as industry leaders.
Geber (1990)	A process of finding the world class examples of a product, service or operational system and then adjusting own products, services or systems to meet or beat those standards.
Vaziri (1992)	A continuous process comparing an organisation's performance against that of the best in the industry considering critical consumer needs and determining what should be improved.
Watson (1993)	The continuous input of new information to an organisation.
Kleine (1994)	An excellent tool to use in order to identify a performance goal for improvement, identify partners who have accomplished these goals and identify applicable practices to incorporate into a redesign effort.
Cook (1995)	A kind of performance improvement process by identifying, understanding and adopting outstanding practices from within the same organisation or from other businesses.
APQC (1999) American Productivity and Quality Centre.	The process of continuously comparing and measuring an organisation against business leaders anywhere in the world to gain information that will help the organisation take action to improve its performance.

3.2.1. TYPES OF BENCHMARKING

Benchmarking is about comparing a company with other companies. The company as a whole can be compared or processes, functions and products can be the object of comparison. Therefore benchmarking activities may differ and there is no single way to approach benchmarking. Different types of benchmarking processes can be defined and classified according to what is compared and against whom comparisons are being made (Andersen and Pettersen, 1996).

Comparing What?

These types of benchmarking can be defined depending on what is being compared:

- Performance benchmarking
- Process benchmarking
- Strategic benchmarking

(Andersen and Pettersen, 1996).

Comparing against Whom?

These types of benchmarking can be defined depending on whom one compares against:

- Internal
- External
- Competitive
- Functional
- Generic

(Andersen and Pettersen, 1996).

3.2.1.1. Performance benchmarking (How well should we be doing it?): is used by companies to compare their positions with respect to the performance characteristics of their key products and services (often financial, but also operational). (Savanam, 2010; Isoraite, 2004; Andersen and Pettersen, 1996).

3.2.1.2. Process benchmarking (How do others achieve it?): is the comparison of methods and practices for performing business processes, with the goal of identifying and observing the best practices from one or more benchmark firms (firms involved in performing similar work or offering similar services) (Savanam, 2010; Isoraite, 2004; Andersen and Pettersen, 1996; John and Howard, 1998; Keith and Edward, 1998).

3.2.1.3. Strategic benchmarking (What should we be doing?): is aimed at improving a company's overall performance by studying the long-term strategies and approaches that helped the 'best practice' companies to succeed. It involves examining the core competencies, product/service development and innovation strategies of such companies. (Savanam, 2010; Isoraite, 2004; Andersen and Pettersen, 1996; Biesada, 1992; John and Howard, 1998; Keith and Edward, 1998).

3.2.1.4. Internal benchmarking: is the comparison between departments, units, subsidiaries or countries within the same company or organisation. Once any part of an organisation has a better performance indicator, others can learn how this was achieved. Findings of internal benchmarking can then be used as a baseline for extending benchmarking to include external organisations. This allows easy access to information, even sensitive data, and also takes less time and resources than other

types of benchmarking (Savanam, 2010; Jay, 2007; Bayney, 2005; Isoraite, 2004; Andersen and Pettersen, 1996; Keith and Edward, 1998).

3.2.1.5. External benchmarking: a comparison of work with external organisations in order to discover new ideas, methods, products and services. This kind of benchmarking provides an opportunity to learn from high-end performers (Jay, 2007).

3.2.1.6. Competitive benchmarking: is the direct comparison of own performance/ results against the best real competitors, i.e. that manufacture the same product or deliver the same service (Savanam, 2010; Jay, 2007; Isoraite, 2004; Andersen and Pettersen, 1996; John and Howard, 1998; Keith and Edward, 1998).

3.2.1.7. Functional benchmarking (How can we excel at this process?): is the comparison of processes or functions against non - competitive organisations within the same sector or technological area. It involves comparison between firms that share some common technological and market characteristics and finding innovative ways of improving work processes. This kind of benchmarking can lead to dramatic improvements (Savanam, 2010; Jay, 2007; Isoraite, 2004; Andersen and Pettersen, 1996; Biesada, 1992; John and Howard, 1998; Keith and Edward, 1998).

3.2.1.8. Generic benchmarking: is the comparison of one's own processes against the best practices anywhere in any type of organization (Savanam, 2010; Isoraite, 2004; Jay, 2007; Andersen and Pettersen, 1996; John and Howard, 1998; Keith and Edward, 1998).

3.2.2. ADVANTAGES OF BENCHMARKING

1. Minimizes the costs and saves time to adapt the best practices of other companies rather than re-invent them in-house.
2. Helps in implementation of upcoming changes and sophisticated technological improvements, arising out of change across industries.
3. Bridges the competitive gaps in one's own concern from other competing firms.
4. Initiates the formulation of strategic goals and objectives based on the external models for improving activities and processes in the organization.
5. Stimulates an organization to overcome its inertia and think differently in the context of the brand-new approaches/models implemented elsewhere.
6. Facilitates organizational learning.
7. Drags improvement in critical areas within the organization by adapting best practices and processes.

(Savanam, 2010; Isoraite, 2004).

3.2.3. BENCHMARKING CASE STUDIES

Benchmarking as a tool is widely used in different sectors, the following are case studies of companies who have applied benchmarking to their system and have benefited from it.

3.2.3.1. XEROX BENCHMARKING (Manufacturing Company)

Background

Xerox was the first company to use benchmarking (Camp, 1989). For Xerox, benchmarking sprang from a competitive crisis. In the 1970s,

Xerox was the largest manufacturer of copiers in the world. However, Japanese manufacturers were making better copiers, selling them for less, and making a good profit. This prompted the company to directly compare itself with its direct and best competitors to determine what it could do to increase productivity while decreasing costs.

The 'Leadership through Quality' program which lead to the implementation of the benchmarking program, introduced by Kearns revitalized the company. The program encouraged Xerox to find ways to reduce their manufacturing costs. Benchmarking against Japanese competitors, Xerox found out that it took twice as long as it's Japanese competitors to bring a product to market, five times the number of engineers, four times the number of design changes, and three times the design costs. The company also found that the Japanese could produce, ship, and sell units for about the same amount that it cost Xerox just to manufacture them. In addition, Xerox's products had over 30,000 defective parts per million - about 30 times more than its competitors. Benchmarking also revealed that Xerox would need an 18% annual productivity growth rate for five consecutive years to catch up with the Japanese. After an initial period of denial, Xerox managers accepted the reality (Camp, 1989; Sik *et al,* 1998; Andersen and Pettersen, 1996).

Following this, Xerox defined benchmarking as "the process of measuring its products, services, and practices against its toughest competitors, identifying the gaps and establishing goals" (Camp, 1989). "Our goal is always to achieve superiority in quality, product reliability and cost." Gradually, Xerox developed its own benchmarking model. This model involved tens steps categorized under five stages - planning, analysis, integration, action and maturity.

Process

The five-stage process involved the following activities:

• Planning: Determine the subject to be benchmarked, identify the relevant best practice organizations and select/develop the most appropriate data collection technique.

• Analysis: Assess the strengths of competitors (best practice companies) and compare Xerox's performance with that of its competitors. This stage determines the current competitive gap and the projected competitive gap.

• Integration: Establish necessary goals, on the basis of the data collected, to attain best performance; integrate these goals into the company's formal planning processes. This stage determines the new goals or targets of the company and the way in which these will be communicated across the organization.

• Action: Implement action plans established and assess them periodically to determine whether the company is achieving its objectives. Deviations from the plan are also tackled at this stage.

• Maturity: Determine whether the company has attained a superior performance level. This stage also helps the company determine whether benchmarking process has become an integral part of the organization's formal management process.

(Camp, 1989).

Xerox collected data on key processes of best practice companies. These critical processes were then analysed to identify and define improvement opportunities. For instance, Xerox identified ten key factors that were related to marketing. These were customer marketing, customer engagement, order fulfilment, product maintenance, billing and collection, financial management, asset management, business

management, human resource management and information technology (Camp, 1989).

These ten key factors were further divided into 67 sub-processes. Each of these sub-processes then became a target for improvement. For the purpose of acquiring data from the related benchmarking companies, Xerox subscribed to the management and technical databases, referred to magazines and trade journals, and also consulted professional associations and consulting firms (Camp, 1989).

Having worked out the model it wanted to use, Xerox began by implementing **competitive benchmarking**. However, the company found this type of benchmarking to be inadequate as the very best practices, in some processes or operations were not being practiced by copier companies. The company then adopted **functional benchmarking**, which involved a study of the best practices followed by a variety of companies regardless of the industry they belonged to (Camp, 1989).

Xerox initiated functional benchmarking with the study of the warehousing and inventory management system of L.L. Bean (Bean), a mail-order supplier of sporting goods and outdoor clothing. Bean had developed a computer program that made order filling very efficient. The program arranged orders in a specific sequence that allowed stock pickers to travel the shortest possible distance in collecting goods at the warehouse. This considerably reduced the inconvenience of filling an individual order that involved gathering relatively less number of goods from the warehouse. The increased speed and accuracy of order filling achieved by Bean attracted Xerox. The company was convinced it could

achieve similar benefits by developing and implementing such a program (Camp, 1989).

Similarly, Xerox zeroed in on various other best practice companies to benchmark its other processes. These included American Express (for billing and collection), Cummins Engines and Ford (for factory floor layout), Florida Power and Light (for quality improvement), Honda (for supplier development), Toyota (for quality management), Hewlett-Packard (for research and product development), Saturn (a division of General Motors) and Fuji Xerox (for manufacturing operations) and DuPont (for manufacturing safety) (Camp, 1989).

Implementation

Regarding Supplier Management System, Xerox found that all the Japanese copier Companies put together had only 1,000 suppliers, while Xerox alone had 5,000. To keep the number of suppliers low, Japanese companies standardized many parts. Often, half the components of similar machines were identical. To ensure part standardization, Japanese companies worked closely with their suppliers. They frequently trained vendor's employees in quality control, manufacturing automation and other key areas. Cooperation between the company and the vendor extended to just-in-time production scheduling, i.e. delivery in small quantities, as per the customer's production schedule (Camp, 1989).

In line with the best practices, Xerox reduced the number of vendors for the copier business from 5,000 to just 400. Xerox also created a vendor certification process in which suppliers were either offered training or explicitly told where they needed to improve in order to continue as a

Xerox vendor. Vendors were consulted for ideas on better designs and improved customer service also (Camp, 1989) .

Inventory Management: Xerox's efforts to improve inventory management practices drew inspiration from the innovative spare parts management practices of its European operations. Traditionally, technical representatives decided the level of spare parts inventory to be carried; little information was available on the actual usage pattern of the spare parts. Xerox's European operations developed a sophisticated information system to get around this problem. Actual usage, rather than mere withdrawal from the stocking point, was used to determine inventory levels. In the late 1980s, Xerox replicated the system in the US and saved tens of millions of dollars in the process. The stocking policy followed by Xerox branch managers was to hold fully finished, fully configured products near to the customer. Because of this policy, they carried vast amounts of inventory, some of which was not even sold during a given period (Camp, 1989).

Another innovative strategy, followed by Xerox to minimize inventory-carrying costs, was to delay the assembly of the product into the final configuration as much as possible. According to a Xerox executive, Graham Scout, "Some finished goods are language sensitive, software sensitive, voltage sensitive and cycle sensitive for different worldwide markets. We will build it to a level where it's generic and then configure it and finish it when we have an order for it. We may have to hold a little more work-in-progress inventory back in the plant but we can certainly avoid holding lots of finished products out in the field."

Manufacturing system: The process of benchmarking helped Xerox revamp its manufacturing techniques. Each 'family unit' (a manager and his direct subordinates) was encouraged to identify its internal as well as external customers and to meet their needs. This process significantly improved the operational efficiency of the work groups. Xerox introduced a Customer Satisfaction Measurement System that integrated customer research and benchmarking activities. The company sent out over 55,000 questionnaires monthly to its customers to measure customer satisfaction and record competitors' performance. It then benchmarked against those competitors that had scored high marks on specific measures of customer satisfaction. Xerox also used the vast amount of information gathered by the system to develop business plans for improving quality and meeting customer needs (Camp, 1989).

As a part of its Leadership through Quality program, Xerox reformulated its quality policy. The new policy supplemented the company's benchmarking efforts. Xerox's new quality policy stated, "Xerox is a quality company. Quality is the basic principle for Xerox. Quality means providing our external and internal customers with the innovative products and services that duly satisfy their requirements. Quality improvement is the job of every Xerox employee". Following this, the company embarked on a complete organizational restructuring exercise that focused on research and development, employee involvement and customer orientation (Camp, 1989).

By the late 1980s, benchmarking had become a day-to-day activity in every division of the company. According to company sources, Xerox's guiding principle was, 'anything anyone can do better, we should aim to do at least equally well." In 1991, Xerox developed Business Excellence

Certification (BEC) to integrate benchmarking with the company's overall strategies. The key performance factors measured by BEC were management leadership, human resource management, customer focus, quality support and tools, process management and business priorities/results. By the mid-1990s, benchmarking was extended to over 240 key areas of product, service and business performance at Xerox. The initiatives were also adopted, at varying levels, at Xerox units across the world. The benchmarking process encouraged Xerox's employees to learn from every situation (Camp, 1989).

The Benefits

The first major payoff of Xerox's focus on benchmarking and customer satisfaction was the increase in the number of satisfied customers. Highly satisfied customers for its copier/duplicator and printing systems increased by 38% and 39% respectively. Customer complaints to the president's office declined by more than 60%. Customer satisfaction with Xerox's sales processes improved by 40%, service processes by 18% and administrative processes by 21%. The financial performance of the company also improved considerably through the mid and late 1980s (Camp, 1989).

Overall customer satisfaction was rated at more than 90% in 1991. Some of the other benefits Xerox derived were: number of defects reduced by 78 per 100 machines; service response time reduced by 27%; inspection of incoming components reduced to below 5%; defects in incoming parts reduced to 150ppm; inventory costs reduced by two-thirds; marketing productivity increased by one-third; distribution productivity increased by 8-10 %; increased product reliability on account of 40% reduction in unscheduled maintenance; notable decrease in labour costs; errors in

billing reduced from 8.3 % to 3.5%; became the leader in the high-volume copier-duplicator market segment; country units improved sales from 152% to 328%. Xerox went on to become the only company worldwide to win all the three prestigious quality awards: the Deming Award (Japan) in 1980, the Malcolm Baldridge National Quality Award in 1989, and the European Quality Award in 1992 (Camp, 1989).

The success of benchmarking at Xerox motivated many companies to adopt benchmarking. By the mid-1990, hundreds of companies implemented benchmarking practices at their divisions across the world. These included leading companies like Ford, AT&T, IBM, GE, Motorola and Citicorp. During the 1990s, Xerox, along with companies such as Ford, AT&T, Motorola and IBM, created the International Benchmarking Clearinghouse (IBC) to promote benchmarking and guide companies across the world in benchmarking efforts (Camp, 1989).

3.2.3.2. BELLWETHER HOUSING (Energy Performance Benchmarking)

Bellwether housing owns and manages 29 apartment buildings that provide affordable housing for more than 3,000 Seattle residents, many of whom are low-income families and seniors. It aims to keep housing costs as low as possible for its residents and that means keeping energy bills in check. Energy is one of the biggest expenses of residential buildings so, for Bellwether, good energy management is key to keeping energy costs down and housing more affordable. Since the organization was founded some decades ago, it has taken great pride in its buildings and has kept a close watch on their maintenance and operations (Lynda, 2011).

Process

In recent years, Bellwether took a deeper dive into each building to get a better sense of how they use energy. One tool they used to benchmark, or measure, their buildings' energy performance was the **ENERGY STAR Portfolio Manager.** This free, online tool allowed Bellwether to assess and compare the energy consumption of a number of buildings in its portfolio, and thereby identify Mercer Court as one with significant potential for energy savings (Lynda, 2011).

Implementation

Benchmarking helped Bellwether identify which of its buildings were the highest energy users and take a strategic approach toward making energy improvements. Through benchmarking, Bellwether found that annual utility expenses at Mercer Court were among the highest of all its buildings. Within 3years, energy costs at Mercer Court had increased by about $300 per unit. The building appeared to be a prime candidate for an energy-efficiency overhaul (Lynda, 2011).

Through assistance from the Enterprise Green Retrofit Program, Bellwether had an energy audit done of the building to find out why energy costs were skyrocketing and identify which upgrades made sense. The audit led to several "ah-ha!" moments for Bellwether. One of those moments was realizing that the building was losing more energy than necessary due to airflow issues, causing the utility bills to be higher than other similar-sized apartment buildings. In total, the energy audit recommended a number of measures that would reduce energy as well as water usage by approximately 30% - the equivalent of almost $10,000 a year in savings (Lynda, 2011).

While Bellwether has not yet tackled all of these recommendations, the group is well on its way to energy savings and has been going after the "low hanging fruit" - relatively easy fixes that still realize significant energy savings. Examples include**:**

• Adjusting the irrigation system (previously on year-round).

• Cleaning dryer vents in the central laundry facility.

• Turning off the heat in non-residential spaces such as corridors.

• Setting bathroom fans to low.

(Lynda, 2011)

Benefits

After these fixes, Mercer Court's energy use in the first 2months was 40% lower than it was during the same period the previous year. According to Bellwether's energy auditor, Ecotope, Bellwether might be able to turn its worst energy performing building into its best (Lynda, 2011).

3.2.3.3. BATH IRON WORKS (Benchmarking of Shipyards)

Bath Iron Works, the U.S.'s fourth-largest shipyard and Maine's largest private employer, was totally unprepared for the end of the Cold War. Since 1977, some 86% of the ships that Bath Iron Works delivered were combat vessels for the US Navy. The company never did any contingency planning and was totally unprepared for the end of the Cold War (Biesada, 1992).

To search for its future, CEO Duane D. Fitzgerald and his Bath team turned to **Strategic Benchmarking**. Instead of asking how a company can excel at a process as in functional benchmarking, strategic benchmarking seeks to incorporate benchmarking into strategic planning.

It asks how the company can become world class in tomorrow's probable economic environment.

Process and Implementation

From past experience, benchmarking the functions of best-in-class companies such as Germany's Thyssen for pipe bending, Walt Disney World for preventive maintenance and neighbouring L.L. Bean for such ordinary procedures as receipt inspection and paper reduction, Bath Iron Works knew it worked. So the company put together a four-man-team, which included its vice president for business development and the president of its largest labour union (the International Association of Machinists and Aerospace Workers), and sent them across the Atlantic to benchmark 10 shipyards in Holland. The team quickly focused on Royal Schelde in Vlissingen, whose machine shop operations were comparable to Bath's, though somewhat smaller. More important, Schelde's contingency planning process had worked (Biesada, 1992).

Benefits

Later on, the Dutch shipyard foresaw the downturn in naval construction and reorganized to become a more market-oriented-as opposed to a product-oriented organization. “Some of the things that they (Royal Schelde) did influenced our recent reorganization,” says Koehler, adding, “We've repositioned ourselves to respond more quickly to market opportunities” (Biesada, 1992).

3.2.3.4. THE CoMET GROUP

In early 1995, five of the world’s largest heavy metro railways – Berlin, London, Hong-Kong, New York and Paris formed a benchmarking

consortium, co-ordinated by the Railway Technology Strategy Centre (RTSC) at Imperial College, London, to compare each system's performance indicators and to use them to find ideas for Best Practice. Since then, three more systems – Mexico City, Sao Paulo and Tokyo - (TRA) – have entered the group, which is known as CoMET – Community of Metros (Vincent, 2003).

The basic idea of the benchmarking club has been to collect among the different members the basic data necessary to develop:

Key Performance Indicators (KPI). This task consists of:

- The definition of indicators within the areas of financial effectiveness, efficiency, asset utilisation, reliability and service quality and safety;
- The design of appropriate survey techniques;
- The collection and validation of relevant data;
- The improvement of the comparability and understanding of the data.

Case studies: This activity is part of the data collection and quality improvement programme with both quantitative and qualitative insights into different practices in different areas of the business. The case studies are designed to test the implementation of KPI and to define best practice. These case studies concern metro railways and other relevant industry experiences.

Best practice: This task gives the opportunity to participating companies to identify revised practices and procedures and to introduce the "best practice" identified on the basis of the KPI and of the conclusion drawn

from the various case studies. After three years, the first examples of best practice implementation were related to:

Capacity: several systems are implementing operational changes to improve the capacity and the reliability of their service;
Contracting out: the lessons learned on contracting out non-core activities are being shared and applied by several participating metros;
Staffing levels: early work of the consortium has indicated significant opportunities to improve cost effectiveness related to staffing – implementation analysis is now underway;
Reliability: the importance of reliability management has been demonstrated and London Underground is now implementing changes on two lines; Rolling stock investment maintenance and staffing (Vincent, 2003).

The CoMET consortium is one of the rare benchmarking groups in urban public transport established for a long period (no deadline was fixed at the creation of the consortium). Future objectives set includes:

- To gain full value from the existing database and the work done in previous phase;
- To assist metros to put in place passenger quality KPIs;
- To improve the implementation rate of Best Practice proposals;
- To start to draw conclusions from time series data to establish trends and impacts of given policies and action programmes;
- To continue to define Best Practice in high priority areas that

can lead directly to implementation

(Vincent, 2003).

3.2.3.5. CITIZEN'S NETWORK BENCHMARKING INITIATIVE

The goal of the pilot project of the European Commission, DG Energy and Transport (DG TREN), was to test the feasibility of comparing public transport performance across all modes, from a citizen's point-of-view. During the pilot, 132 performance indicators were tested, which were refined to 38 indicators by the end of the process. The overall objective of the project was to promote the identification and dissemination of good practice in urban transport systems and infrastructure by enabling cities and regions to exchange ideas and experiences and to compare the performance of their local and regional transport systems by benchmarking methods (Dhingra, 2011). The three main questions which the indicators were seeking to answer are:

- How do people travel? What transport services do people prefer and how well is the system meeting these requirements?
- How accessible is the transport system? How congested are the roads? What information is available to motorist and transport users?
- What are the costs of transport? What is the impact of transport on the environment? How safe is it to travel?

3.3. WHY UNITED KINGDOM WAS CHOSEN FOR THE BENCHMARKING

United Kingdom was chosen for the benchmarking because as a developed country, it is among the best practice; it has got an organised transportation system, which is among the best in the world.

3.3.1. A BRIEF OVERVIEW OF TRANSPORT IN UNITED KINGDOM

Transport in the United Kingdom is facilitated with road, air, rail, and water networks. A radial road network totals 29,145 miles (46,904 km) of main roads, 2,173 miles (3,497 km) of motorways and 213,750 miles (344,000 km) of paved roads. The National Rail network of 10,072 route miles (16,116 km) in Great Britain and 189 route miles (303 route km) in Northern Ireland carries over 18,000 passenger and 1,000 freight trains daily. Urban rail networks exist in London, Manchester, Birmingham, Edinburgh, Glasgow, Cardiff, Belfast, Leeds and Liverpool. There are many regional and international airports, with Heathrow Airport in London being one of the busiest in the world. The UK also has a network of ports, which received over 558 million tons of goods in 2003–2004 (Anderson, 2014; Solomons, 2015).

Railway System in the UK

The railway system in the United Kingdom is the oldest in the world: the world's first locomotive-hauled public railway opened in 1825. Most of the railway track is managed by Network Rail, which in 2014 had a network of 15,753 kilometres (9,788 mi) of standard-gauge lines, of which 5,268 kilometres (3,273 mi) were electrified. These lines range from single to quadruple track or more. In addition, some cities have separate rail-based mass transit systems (including the extensive and historic London Underground). There are also several private railways (some of them narrow-gauge), which are primarily short tourist lines. The British railway network is connected with that of continental Europe by an undersea rail link, the Channel Tunnel, opened in 1994.

The United Kingdom is a member of the International Union of Railways (UIC). The UIC Country Code for United Kingdom is 70. The UK has the 18th largest railway network in the world; despite many lines having

closed in the 20th century it remains one of the densest rail networks. It is one of the busiest railways in Europe, with 20% more train services than France, 60% more than Italy, and more than Spain, Switzerland, The Netherlands, Portugal and Norway combined (Anderson, 2014; Solomons, 2015).

SUMMARY

This chapter has presented an overview of KPIs and Benchmarking. Case studies of benchmarking have been presented and KPIs that have been identified and developed for the Nigerian transport sector, which have been used in the survey were also presented and this leads to the research methodology that is presented in the next chapter.

CHAPTER 4 – RESEARCH METHODOLOGY

4.0. INTRODUCTION

Research methodology refers to a set of tools or techniques used in the collection of data. It involves the use of a specific type of research instrument such as a case study, self-completion questionnaire, a structured interview schedule, or participant observation whereby the researcher considering the method adopted above either studies, compares and collates, listens to and watches others in the course of conducting the research (Bryman and Bell, 2007). Furthermore, it outlines the categorical process undertaken to achieve the research objectives (kumar, 2008), this goes to say that research methodology establishes the rationale underlining the choice of methods by the researcher. Therefore, this chapter presents the research philosophy, research approach, data collection methods, sampling technique, validity and reliability, ethical issues and the benchmarking concept.

4.1. RESEARCH PHILOSOPHY

When undertaking research of this nature, it is important to consider different research paradigms and matters of ontology and epistemology (Andrew et al, 2008). Since these parameters describe perceptions, beliefs, assumptions and the nature of reality and truth (knowledge of that reality) (Flowers, 2009), they can influence the way in which the research is undertaken, from design through to conclusions, and it is therefore important to understand and discuss these aspects in order that approaches congruent to the nature and aims of the particular inquiry are adopted, and to ensure that researcher biases are understood, exposed, and minimized. Whilst James and Vinnicombe (2002) caution that we all

have inherent preferences that are likely to shape our research designs, Blaikie (2000) describes these aspects as part of a series of choices that the researcher must consider and he shows the alignment that must connect these choices back to the original Research Problem. If this is not achieved, methods incompatible with the researcher's stance may be adopted, with the result that the final work will be undermined through lack of coherence.

Blaikie (1993) argues that these aspects are highly relevant to Social Science since the humanistic element introduces a component of 'free will' that adds a complexity beyond that seen in the natural sciences and others, such as Hatch and Cunliffe (2006) draw attention to the fact that different paradigms 'encourage researchers to study phenomena in different ways', going on to describe a number of organisational phenomena from three different perspectives, thus highlighting how different kinds of knowledge may be derived through observing the same phenomena from different philosophical perspectives. As well as stimulating debate, Denzin and Lincoln (2003) and Kvale (1996) highlight how these different positions can result in much tension amongst academics.

4.1.1. ONTOLOGY

Blaikie (1993) describes the root definition of ontology as 'the science or study of being' and develops this description for the social sciences to encompass 'claims about what exists, what it looks like, what units make it up and how these units interact with each other'. In short, ontology describes our view (whether claims or assumptions) on the nature of reality, and specifically, is this an objective reality that really exists, or only a subjective reality, created in our minds. Hatch and Cunliffe (2006) use both an everyday example, and a social science example to illustrate

the point. For the everyday example, they use the example of a workplace report – asking one to question whether it describes what is really going on, or only what the author thinks is going on. They go on to highlight the complexity that is introduced when considering phenomena such as culture, power or control, and whether they really exist or are simply an illusion, further extending the discussion as to how individuals (and groups) determine these realities – does the reality exist only through experience of it (subjectivism), or does it exist independently of those who live it (objectivism).

As a result, we all have a number of deeply embedded ontological assumptions which will affect our view on what is real and whether we attribute existence to one set of things over another. If these underlying assumptions are not identified and considered, the researcher may be blinded to certain aspects of the inquiry or certain phenomena, since they are implicitly assumed, taken for granted and therefore not opened to question, consideration or discussion.

When considering that different views exist regarding what constitutes reality, another question must be how is that reality measured, and what constitutes knowledge of that reality. This leads to questions of Epistemology.

4.1.2. EPISTEMOLOGY

Closely coupled with ontology and its consideration of what constitutes reality, epistemology considers views about the most appropriate ways of enquiring into the nature of the world (Easterby-Smith et al, 2008) and 'what is knowledge and what are the sources and limits of knowledge' (Eriksson et al, 2008). Questions of epistemology begin to consider the research method, and Eriksson and Kovalainen go on to discuss how epistemology defines how knowledge can be produced and argued for.

Blaikie (1993) describes epistemology as 'the theory or science of the method or grounds of knowledge' expanding this into a set of claims or assumptions about the ways in which it is possible to gain knowledge of reality, how what exists may be known, what can be known, and what criteria must be satisfied in order to be described as knowledge. Chia (2002) describes epistemology as 'how and what it is possible to know' and the need to reflect on methods and standards through which reliable and verifiable knowledge is produced and Hatch and Cunliffe (2006) summarise epistemology as 'knowing how you can know' and expand this by asking how is knowledge generated, what criteria discriminate good knowledge from bad knowledge, and how should reality be represented or described. They go on to highlight the inter-dependent relationship between epistemology and ontology, and how one both informs, and depends upon, the other.

In considering this link, the need to understand the position of the researcher becomes more obvious. If the researcher holds certain ontological positions or assumptions, these may influence the epistemological choices or conclusions drawn. Hence, as with ontology, both objective and subjective epistemological views exist. Eriksson and Kovalainen (2008) describe an objective epistemology as presuming that a world exists that is external and theory neutral, whereas within a subjective epistemological view no access to the external world beyond our own observations and interpretations is possible. Saunders, Lewis and Thornhill (2007) discuss this further, highlighting that certain researchers therefore argue that data collected from objects that exist separate to the researcher (an external reality) is less open to bias and therefore more objective and that if social phenomena are studied, these must be presented in a statistical, rather than narrative, form in order to

hold any authority, a position of course that many researchers would challenge and Blaikie (1993) contends that since social research involves so many choices, the opportunity for researchers values and preferences to influence the process makes it difficult to ultimately achieve true objectivity.

These discussions led to the next area for consideration, which Blaikie (2000) describes as the 'research paradigm' and by others (Saunders et al, 2007) as the 'research philosophy'. These philosophies are formed from basic ontological and (the related) epistemological positions, and have developed in both classical and contemporary forms to effectively classify different research approaches. Denzin and Lincoln (2003) describe a research paradigm as 'an interpretive framework' and in borrowing from Guba, as a 'basic set of beliefs that guides action'. The next section considers three key paradigms – those of positivist (classical), interpretivist / constructivist (classical) and realist (contemporary).

4.2. RESEARCH PARADIGMS

Three key paradigms are briefly discussed, and a simple classification used to distinguish the key components. These paradigms are chosen not only for their prevalence in research, but because they effectively form the 'poles' from which other paradigms are developed or derived. Often, different names are used to describe apparently similar paradigms; in part this is as a result of similar approaches being developed in parallel across different branches of the social sciences.

4.2.1. POSITIVIST

The positivist position is derived from that of natural science and is characterised by the testing of hypothesis developed from existing theory

(hence deductive or theory testing) through measurement of observable social realities. This position presumes the social world exists objectively and externally, that knowledge is valid only if it is based on observations of this external reality and that universal or general laws exist or that theoretical models can be developed that are generalisable, can explain cause and effect relationships, and which lend themselves to predicting outcomes.

Positivism is based upon values of reason, truth and validity and there is a focus purely on facts, gathered through direct observation and experience and measured empirically using quantitative methods – surveys and experiments - and statistical analysis (Blaikie, 1993; Saunders et al, 2007; Eriksson et al, 2008; Easterby-Smith et al, 2008; Hatch et al, 2006). Hatch and Cunliffe (2006) relate this to the organisational context, stating that positivists assume that what truly happens in organisations can only be discovered through categorisation and scientific measurement of the behaviour of people and systems and that language is truly representative of the reality.

4.2.2. INTERPRETIVIST / CONSTRUCTIVIST

This position is described by Hatch and Cunliffe (2006) as anti-positivist and by Blaikie (1993) as post-positivist since it is contended that there is a fundamental difference between the subject matters of natural and social sciences. In the social world it is argued that individuals and groups make sense of situations based upon their individual experience, memories and expectations. Meaning therefore is constructed and (over time) constantly re-constructed through experience resulting in many differing interpretations. It is these multiple interpretations that create a

social reality in which people act. Under this paradigm, therefore, it is seen as important to discover and understand these meanings and the contextual factors that influence, determine and affect the interpretations reached by different individuals. Intepretivists consider that there are multiple realities (Denzin et al, 2003).

Since 'all knowledge is relative to the knower' interpretivists aim to work alongside others as they make sense of, draw meaning from and create their realities in order to understand their points of view, and to interpret these experiences in the context of the researchers academic experience (Hatch et al, 2006), and hence is inductive or theory building. The focus of the researcher is on understanding the meanings and interpretations of 'social actors' and to understand their world from their point of view, is highly contextual and hence is not widely generalisable (Saunder et al, 2007). Understanding what people are thinking and feeling, as well as how they communicate, verbally and non-verbally are considered important (Easterby-Smith et al, 2008), and given the subjective nature of this paradigm, and the emphasis on language, it is associated with qualitative approaches to data gathering (Eriksson et al, 2008). The close nature of the researcher and the researched in this paradigm, and the risk that any interpretation is framed within the mind of the researcher means that steps must be introduced to avoid bias. The use of self-reflection is advised.

4.2.3. REALIST

Born from a frustration that positivism was over-deterministic (in that there is little room for choice due to the causal nature of universal laws) and that constructionism was so totally relativist (and hence highly

contextual), realism takes aspects from both positivist and interpretivist positions. It holds that real structures exist independent of human consciousness, but that knowledge is socially created, with Saunders, Lewis and Thornhill (2007) contending that our knowledge of reality is a result of social conditioning. According to Blaikie (1993), whilst realism is concerned with what kinds of things there are, and how these things behave, it accepts that reality may exist in spite of science or observation, and so there is validity in recognising realities that are simply claimed to exist or act, whether proven or not. In common with intepretivist positions, realism recognises that natural and social sciences are different, and that social reality is pre-interpreted, however realists, in line with the positivist position also hold that science must be empirically-based, rational and objective and so it argues that social objects may be studied 'scientifically' as social objects, not simply through language and discourse.

Whereas positivists hold that direct causal relationships exist, that these relationships apply universally (leading to prediction) and that the underlying mechanisms can be understood through observation, realists take the view that the underlying mechanisms are simply the powers or tendencies that things have to act in a certain way, and that other factors may moderate these tendencies depending upon circumstances, and hence the focus is more on understanding and explanation than prediction. Although Blaikie describes realism as 'ultimately a search for generative mechanisms' he points out that realists recognise that the underlying mechanisms can act apparently independently or 'out of phase' with the observable events, and that events can occur independently of them being experienced, a view that Hatch and Cunliffe (2006) describe as a 'stratified' form of reality whereby surface events are shaped by

underlying structures and mechanisms but that what we see is only part of the picture. From an organisational perspective, Hatch and Cunliffe (2006) describe the realist researcher as enquiring into the mechanisms and structures that underlie institutional forms and practices, how these emerge over time, how they might empower and constrain social actors, and how such forms may be critiqued and changed. Realists take the view that researching from different angles and at multiple levels will all contribute to understanding since reality can exist on multiple levels (Chia, 2002) and hence realism may be seen as inductive or theory building.

4.3. RESEARCH APPROACH

This research approach will adopt the Positivist position. The aim and objectives of this research have been stated in chapter 1. Literature has been used to inform the research and the research will rely on quantitative data. This research is deductive rather than inductive. Since positivists place emphasis on values of reasoning, truth and validity and also focus purely on facts, gathered through direct observation and experience and measured empirically using quantitative methods, this approach seems particularly suited to the focus of this particular research.

4.4. DATA COLLECTION METHOD

Primary data was obtained through questionnaires, structured and semi-structured questionnaires were developed which were distributed, to the general public (this includes: Passengers, Drivers, Transport operators, Experts/Stakeholders, both male and female of different age groups) in other to get their perceptions on the public transport services. Secondary data was collected from published newspaper reports, company archives, and annual reports.

Reasons for choosing the questionnaire method

(1) The questionnaire method is the best for large sample size, unlike focus group or interviews because a fairly large population sample (about 50-100 or more respondents) is being targeted for the validation process.

(2) Questionnaires reduce bias because there is uniform question presentation and no middleman bias, as the researcher's own opinion will not influence the respondent to answer in a certain manner unlike focus group or interviews.

4.5. TYPES OF DATA

There are four types of data or measurement scales: nominal, ordinal, interval and ratio. These are simply ways to categorize different types of variables, they are: Nominal, Ordinal, Interval and Ratio data.

1. Nominal data: This refers to categorically discreet data. E.g.
Gender: Male, Female (Brown, 2011).

2. Ordinal data: This refers to data in which an ordering or ranking of responses is possible. E.g. How Satisfied are you with our service? Very Unsatisfied (1), Unsatisfied (2), Neutral (3), Satisfied (4), Very Satisfied (5) (Brown, 2011).

3. Interval data: Generally integer data in which ordering and distance measurement are possible. E.g. temperature in degrees Fahrenheit (Brown, 2011).

4. Ratio data: Data in which meaningful ordering, distance, decimals and fractions between variables are possible. E.g. height and weight (Brown, 2011).

The research data falls within the ordinal level of measurement because the responses are categorized into the following categories: Very Good (5), Good (4), Neutral (3), Poor (2), and Very Poor (1).

4.6. DATA ANALYSIS

Data analysis is the process of bringing meaning and interpretation to mass data collected (De Vaus, 2002). Amaratunga et al., (2002) identified that data analysis, forms a major part of any research. It consists of examining, categorising and tabulating data obtained (Miles and Huberman, 1994). In this research, a structured literature review was first conducted and it served as the foundation for the research. The empirical data gathered was quantitative in nature and used to establish the link between the literature reviews. Questions were asked using questionnaires. A likert scale was used to assess the views of the participants. Likert scales fall within the ordinal level of measurement, which means that the responses are categorized into the following categories: Very Good (5), Good (4), Neutral (3), Poor (2), and Very Poor (1). The categorization enables priorities to be allocated (Bryman, 2008; Laerhoven *et al.*, 2004).

Relative Importance Index (RII) has been applied in the analysis to evaluate the performance of the public transport services. The Relative Importance Index (RII) was calculated for each performance indicators according to the frequency of their performance as suggested by Tonidandel and LeBreton (2011).

The RII formula is as follows:

$$RII = \frac{\sum fx}{5x\sum f}$$

Where:

fx = weighting given to each Performance Measure by the respondents
five(5) = highest weight on the likert scale (five in this case)
$\sum f$ = total number of sample

The RII ranges from zero to one.

RII < 0.60 indicates low Performance

RII ≥ 0.60 < 0.80 indicates high Performance

RII ≥ 0.80 indicates very high Performance

(Tonidandel and LeBreton, 2011)

Other statistical analysis were also employed using Microsoft excel and Word to present a visual representation of the patterns and trends of the data.

4.7. SAMPLING TECHNIQUE

Sampling is the process by which inference is made to the whole by examining a part and sampling occurs generally when the population is too large to study in its entirety. Hence the sample selected would be representative of the general population (Tashakkori and Teddlie, 2010). Within this research, the target population is the Nigerian transport sector. Participants are selected to produce these kinds of insights as representatives of the general population. Generally, there are two basic types of sampling (Salganik and Heckathorn, 2004):

1. The probability sampling
2. Non-probability sampling

1. The probability sampling: This is the type of sampling in which the entire unit in the population has a chance of being selected in the sample, and it is possible to specify the probability of selecting any particular sample of a given size within the population (Salganik and Heckathorn, 2004).

2. Non-probability sampling: In this sampling method, the probability of selection cannot be determined and some elements of population do not have any chance of selection. It basically involves selecting elements of the population based on assumptions regarding the population of interest, which forms the criteria for selection (Salganik and Heckathorn, 2004).

4.7.1. SAMPLING METHOD ADOPTED IN THE RESEARCH

The sampling method adopted in this research is the probability sampling technique. Data was collected from a subset of transport users, this includes: Passengers, Drivers, Transport operators, Experts/Stakeholders, both male and female of different age groups. The concept of data collection from a subset of large population in order to support research work was highlighted by Jankowicz (2005). This research targeted response from 500 respondents (however 474 respondents were gotten), who were chosen at random from a large population of both male and female between the age ranges of 20-70.

4.8. VALIDITY AND RELIABILITY

It is important to evaluate the quality of data interpretation by examining the reliability and validity of the research findings. Whatever research

methodology is adopted for a research, reliability and validity issues have to be considered as they are tests of the trustworthiness of the measurement instruments used in research (Golafshani, 2003). Validity was strengthened by using literature to back up the research findings. A research study is reliable if consistent results are obtained by different researchers undertaking the study under the same conditions. Reliability was strengthened in this research by pre-testing (pilot study) the questionnaire and also, Robson (1993) indicates that a high reliability of response is obtainable by providing all respondents with the exact same set of questions (which is the case in this research, all respondents were given same questionnaires).

4.8.1. TRIANGULATION

Triangulation is a strategy for improving the validity and reliability of a research or evaluation of findings (Golafshani, 2003). Patton (2001) advocates that the use of triangulation strengthens a study by combining methods. Triangulation refers to the use of more than one approach for the investigation of a research question in order to enhance confidence in the ensuing findings (Bryman, 2006). The use of various methods for data collection in this research, assisted in addressing the potential drawbacks of individual methods by exploiting the strengths of each method at various stages of the research. Triangulation is also known as convergent methodology (Creswell, 2002) as illustrated in figure 4.1.

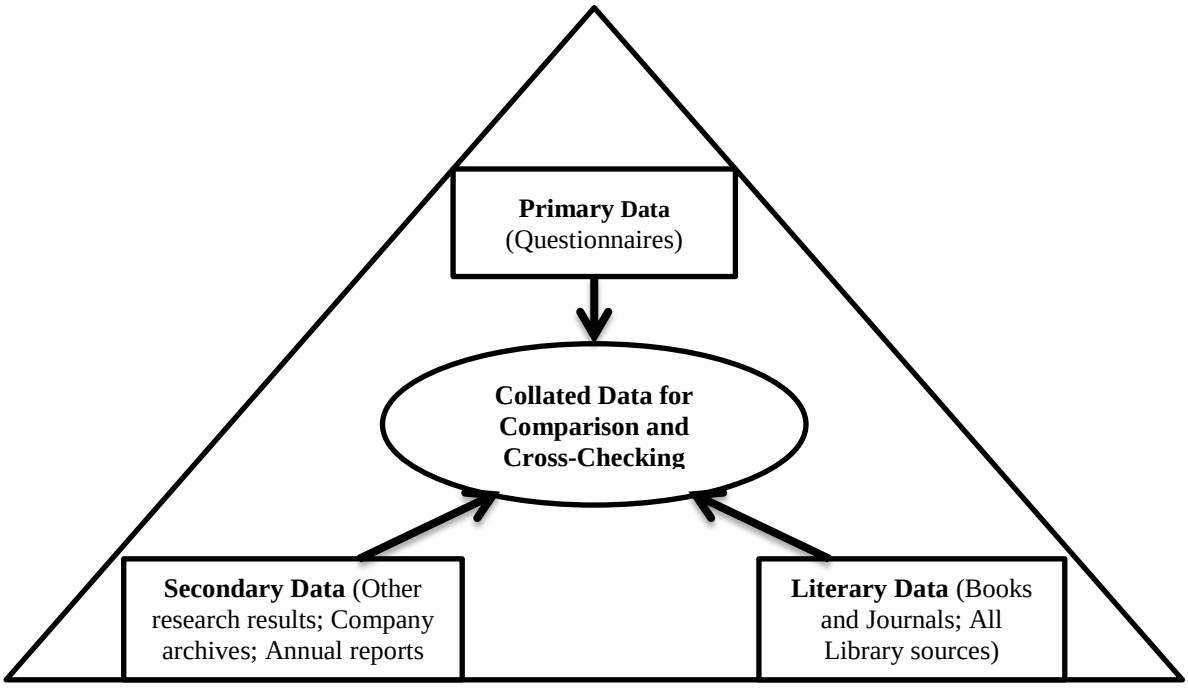

Figure 4.1. Triangulation model (Creswell, 2002).

4.9. ETHICAL CONSIDERATIONS

The participants in this study were informed about the nature of the study and what would become of the findings once the study had been completed. The participants' rights to self-determination and full disclosure were endorsed by the researcher. Respondents were fully informed about the nature and importance of the research and were in a position to decide whether or not to participate in the study. Informed consent means that participants have adequate information and have the freedom of choice to consent or refuse to participate in the research. The respondents' right to informed consent was respected and endorsed by the researcher. Respondents were treated respectfully and courteously at all times and their selection was based upon the selection criteria for inclusion in the study and not on any other criteria. No signed consent forms were required from respondents and it was accepted that the return of a completed questionnaire indicated respondents' consent.

The researcher ensured that the respondents' anonymity was maintained. Although it was stated in the questionnaire that respondents should fill in their names, it was for verification purpose and also to add credibility to the research. No names were linked to any responses. No information obtained from respondents was reported in a manner that could possibly identify the respondents. Subsequent to data analysis and publication of the research report, all the documents will be destroyed by the researcher.

The researchers name and email address were included in the introductory section of the questionnaire. The accompanying letter provided participants with information on the nature of the study (See Appendix 5 for Letter accompanying questionnaire). The university's ethical procedures have also been complied with by filling and submitting the online ethical approval form.

4.10. BENCHMARKING CONCEPT

The **Strategic benchmarking** has being chosen for this research since it seeks to learn from best practice. In other words the Nigerian transport sector seeks to learn from best practice transport sector in other to improve.

4.10.1. BENCHMARKING METHODOLOGY

As earlier stated, benchmarking is a means through which a level of performance that is superior but acceptable and achievable is located. A typical benchmarking process at an organization level would require answers to the following:

1. Where is the organisation trying to get to? (i.e. the vision);
2. What needs to be achieved in order to get to the destination? (i.e. Critical Success factors); and

3. Where is the organisation now? (Identification of Key performance indicators/key business Processes and measuring performances of the processes)

The answers to the three questions above are pivotal to the benchmarking process at an organisation level. In practice, benchmarking is about measuring organisation performance in a particular area against best practice in a similar area. The ultimate result of benchmarking is to change the way certain activities are done in order to improve performance. Hence a simplified Strategic benchmarking process could be represented as in Figure 4.2.

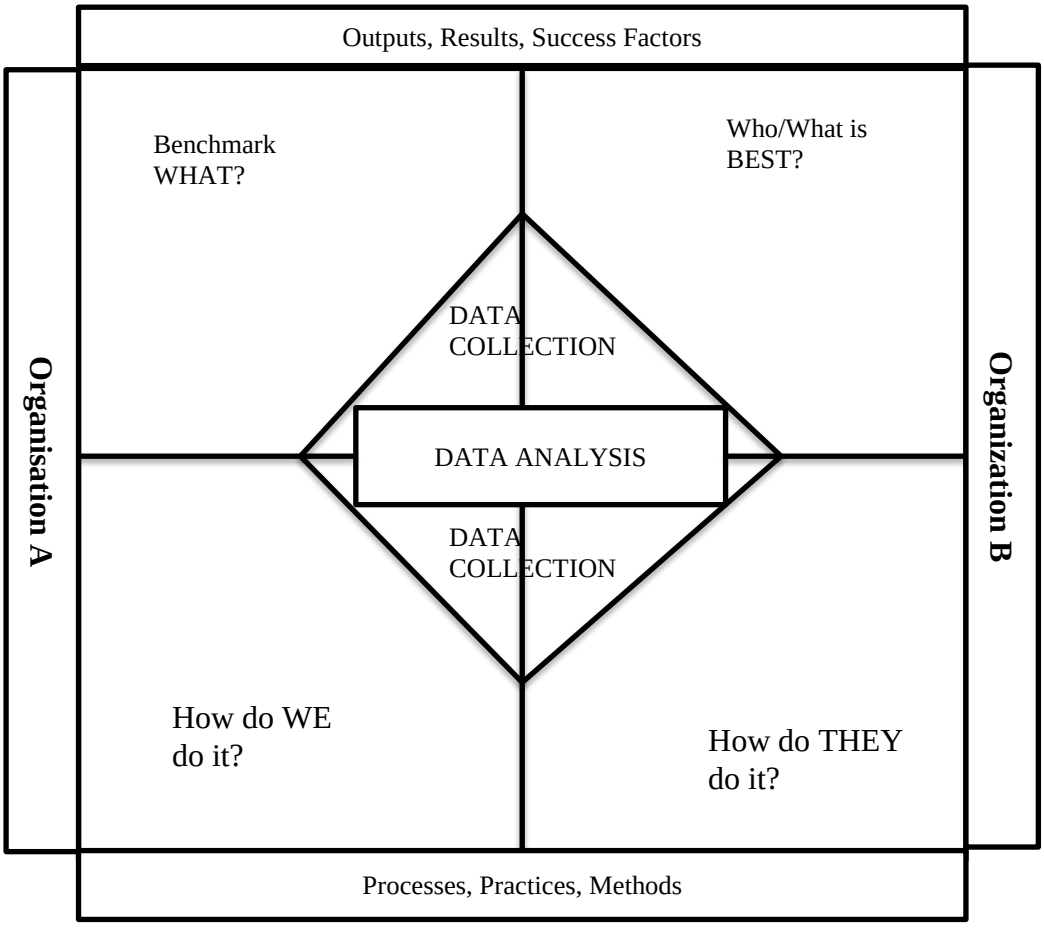

Figure 4.2. Diagrammatic representation of a Strategic Benchmarking Process (SUMATRA, 2011).

SUMMARY

The research philosophy, approach, strategy, data collection methods, ethical issues and the benchmarking concept applied in this research have been presented in this chapter. This leads to the analysis of the data that has been collected which is presented in the next chapter.

CHAPTER 5 – DATA COLLECTION, ANALYSIS AND DISCUSSION

5.0. INTRODUCTION

This chapter contains tabulated result of the data collected, analysis and critical discussion of the data result. Questionnaires were used in this research in order to evaluate transport users' perceptions/satisfaction with transport services.

5.1. DATA COLLECTION

The data collected was both primary and secondary. The primary data was collected through a questionnaire survey distributed to participants in four cities (Warri, Lagos, Ughelli and Benin) in Nigeria. The secondary data was collected from literature, which includes journals, books, annual reports, company archives, and published newspapers.

5.1.1. PRIMARY DATA COLLECTION

Primary data was collected through structured/semi-structured questionnaires, which were distributed, to the respondents. The study sample included 474 respondents comprising both male and female between the age ranges of 20-70. From the 474 respondents, just 21 (4.4%) have used rail transport; this low patronage figure is as a result of the long time neglect of the Nigerian rail transport system; 81 (17.08%) have used Air transport, the major reason the others have not patronised it, is that it is too expensive; 89 (18.77%) have used Water transport, the major reason given by the other respondents for not patronising it, was that it is not safe; while 474 (100%) of the correspondents use road transport daily which has led to an increasing pressure on road transport and infrastructures. Data was collected respectively from the following cities: Lagos (128 respondents), Warri (201 respondents), Ughelli (92 respondents) and Benin (52 respondents).

5.1.2. SECONDARY DATA COLLECTION

Secondary data was also collected on transport security (highways robbery incidents) from published newspaper reports. Linear regression was used to analyse the data, the trend shows an increase in robbery incidents and the regression model/equation was used to predict future highways robbery incidents. There are no incidents of highways armed robbery in the United Kingdom because they have put in place pro-active security measures unlike Nigeria. The survey results used in the United Kingdom was gotten from Literature; the survey was conducted in Greater Manchester and the sample size is 2064.

5.2. BENCHMARKING FOCUS

The road transport has been focused on for the benchmarking because it is the major mode of transportation and the method derived can also be applied to the other modes of transport such as rail, air and water transport for performance enhancement.

Lagos RII values were the lowest falling below 0.60 when compared to the other cities; Warri, Ughelli, Benin. This simply means Lagos has the lowest satisfaction ratings; the public transport users in Lagos are not satisfied with the public transport services provided.

The RII values for Nigeria falls below 0.60 while that of the UK range between 0.78 to 0.80, these values indicate that the public transport system in Nigeria needs improvement and it can learn from the UK strategy since it has higher RII values.

The following tables and figures contain the survey responses and various analysis.

5.3. PILOT STUDY RESULTS

The pilot study was done to strengthen the reliability of the key performance indicators, the pilot study involved twenty (20) participants. The pilot study results have been presented in table 5.1. From the analysis, it can be seen that most of the RII values are low.

Table 5.1. Pilot study analysis

PILOT STUDY RESULTS										
NO.	**PERFORMANCE MEASURES**	Very Good 5	Good 4	Neutral 3	Poor 2	Very Poor 1	∑f	∑fx	Mean	RII Values
	TICKET RATINGS									
1	Ticket office	1	7	2	10	0	20	45	2.25	0.45
2	Number of ticket booths	2	4	5	9	0	20	59	2.95	0.59
3	Efficiency of ticketing staffs	2	6	2	8	2	20	57	2.85	0.57
4	Attitude of ticketing staffs	0	3	4	10	3	20	47	2.35	0.47
5	Information provided by ticketing staffs	0	2	6	10	2	20	48	2.4	0.48
	MOTOR PARK/BUS STATIONS/STOPS RATINGS									
6	Cleanliness/Maintenance of Motor Parks	0	4	4	12	0	20	52	2.6	0.52
7	Signage (easy to understand/clear and helpful)	0	1	3	10	6	20	39	1.95	0.39
8	Information about Service changes	0	3	2	11	4	20	44	2.2	0.44
9	Assistance/Customer service	0	3	5	9	3	20	48	2.4	0.48
10	Toilet Facilities	1	3	4	10	2	20	51	2.55	0.51
11	Refreshment Facilities	0	4	10	6	0	20	58	2.9	0.58
12	Waiting Rooms	0	4	4	8	4	20	48	2.4	0.48
13	Personal Security in Motor Parks	0	0	2	8	10	20	32	1.6	0.32
14	Easy and Accessible complaint handling mechanism put in place	0	1	5	10	3	20	42	2.1	0.42
15	Facilities for Car parking	0	1	4	10	5	20	41	2.05	0.41
16	Responses to Emergency	0	3	6	11	0	20	52	2.6	0.52
17	Ease of connection with other modes of public transport	2	6	10	2	0	20	68	3.4	0.68
18	Assistance and information for disabled/elderly people in Motor Parks	0	6	8	6	0	20	60	3	0.60
19	Accessibility of Motor Parks	6	8	6	0	0	20	80	4	0.80
20	Personal Safety in Motor Parks	0	2	10	6	2	20	52	2.6	0.52
	VEHICLE RATINGS									
21	Cleanliness/Maintenance of Vehicles	0	2	6	10	2	20	48	2.4	0.48
22	Comfort of Seating space	0	1	6	11	2	20	46	2.3	0.46
23	Punctuality of Vehicles	2	6	10	2	0	20	68	3.4	0.68
24	Temperature On-board	0	1	8	10	1	20	49	2.45	0.49
25	On-board Facilities	0	1	6	11	2	20	46	2.3	0.46
26	Reliability of Vehicles	0	2	4	12	2	20	44	2.2	0.44
27	Frequency of Vehicles	0	6	10	2	2	20	60	3	0.60
28	Travel time	0	7	11	2	0	20	65	3.25	0.65
29	Assistance and information for disabled/elderly people On-board	0	2	6	10	2	20	48	2.4	0.48
30	Accessibility of Vehicles	0	2	6	11	1	20	49	2.45	0.49
31	Personal Safety On-board	0	2	8	10	0	20	46	2.3	0.46
32	Personal Security On-board	0	0	5	15	0	20	45	2.25	0.45
33	Journey Comfort	0	2	10	8	0	20	54	2.7	0.54
34	Security during evening/night	0	0	0	16	4	20	36	1.8	0.36
35	Accessibility during evening/night	0	0	6	12	2	20	44	2.2	0.44
36	Overall Satisfaction	0	0	5	13	2	20	43	2.15	0.43

5.4. WARRI SURVEY RESULTS

Presented in table 5.2. are the Warri survey results. The analysis shows that most of the RII values are above 0.60, which indicates high performance except for two key performance indicators: Security during evening/night and Accessibility during evening/night, which fell below 0.60 indicating low performance.

Table 5.2. Warri Analysis

WARRI PUBLIC TRANSPORT USERS' RATINGS										
NO.	**KEY PERFORMANCE INDICATORS/MEASURES**	Very Good 5	Good 4	Neutral 3	Poor 2	Very Poor 1	∑f	∑fx	Mean	RII Values
	TICKET RATINGS									
1	Ticket office	6	40	23	4	0	73	267	3.66	0.73
2	Number of ticket booths	6	39	64	2	0	111	379	3.41	0.68
3	Efficiency of ticketing staffs	9	34	63	2	3	111	377	3.40	0.68
4	Attitude of ticketing staffs	8	33	61	5	5	112	370	3.30	0.66
5	Information provided by ticketing staffs	6	41	22	4	2	75	270	3.6	0.72
	MOTOR PARK/BUS STATIONS/STOPS RATINGS									
6	Cleanliness/Maintenance of Motor Parks	10	47	38	15	5	115	387	3.37	0.67
7	Signage (easy to understand/clear and helpful)	5	44	35	4	1	89	315	3.54	0.71
8	Information about Service changes	6	36	34	12	4	92	304	3.30	0.66
9	Assistance/Customer service	2	36	34	12	3	87	283	3.25	0.65
10	Toilet Facilities	8	32	27	7	9	83	272	3.28	0.66
11	Refreshment Facilities	6	33	33	8	8	88	285	3.24	0.65
12	Waiting Rooms	7	38	28	9	5	87	294	3.38	0.68
13	Personal Security in Motor Parks	2	38	60	10	5	115	367	3.19	0.64
14	Easy and Accessible complaint handling mechanism put in place	2	38	35	9	2	86	287	3.34	0.67
15	Facilities for Car parking	9	40	37	5	2	93	328	3.53	0.71
16	Responses to Emergency	3	34	58	12	6	113	355	3.14	0.63
17	Ease of connection with other modes of public transport	2	40	54	8	5	109	353	3.24	0.65
18	Assistance and information for disabled/elderly people in Motor Parks	10	42	30	6	4	92	324	3.52	0.70
19	Accessibility of Motor Parks	13	59	39	2	2	115	424	3.69	0.74
20	Personal Safety in Motor Parks	5	38	57	9	6	115	372	3.23	0.65
	VEHICLE RATINGS									
21	Cleanliness/Maintenance of Vehicles	6	49	37	16	7	115	376	3.27	0.65
22	Comfort of Seating space	9	50	31	15	10	115	378	3.29	0.66
23	Punctuality of Vehicles	8	40	56	8	1	113	385	3.41	0.68
24	Temperature On-board	3	37	55	12	4	111	356	3.21	0.64
25	On-board Facilities	5	39	37	11	6	98	320	3.27	0.65
26	Reliability of Vehicles	4	39	46	17	5	111	353	3.18	0.64
27	Frequency of Vehicles	2	48	46	14	2	112	370	3.30	0.66
28	Travel time	7	37	53	11	1	109	365	3.35	0.67
29	Assistance and information for disabled/elderly people On-board	10	46	31	8	2	97	345	3.56	0.71
30	Accessibility of Vehicles	11	61	32	9	0	113	413	3.65	0.73
31	Personal Safety On-board	3	39	56	12	4	114	367	3.22	0.64
32	Personal Security On-board	2	39	47	20	4	112	351	3.13	0.63
33	Journey Comfort	8	50	34	14	5	111	375	3.38	0.64
34	Security during evening/night	3	18	39	21	11	92	257	2.79	0.56
35	Accessibility during evening/night	1	30	34	19	8	92	273	2.97	0.59
36	Overall Satisfaction	8	48	54	5	0	115	404	3.51	0.70

CLUSTERING OF SUGGESTIONS

At the end of the questionnaire respondents were asked to write down any other suggestions they might have. Some of them did write down some suggestions, which have been clustered in this section.

SUGGESTIONS ON BAD ROADS

"Repair the roads and make them motorable"

"Nigerian roads are very bad"

"Government should endeavour to maintain our road for easy flow of traffic"

"Our road network is very bad"

"No good roads, no good transport. So government should take it as a point of duty to maintain roads"

"Our roads are not motorable"

"So many bad roads in the country, government should do something about them"

"Government should take Nigerian roads more seriously because there are lots of accidents on our roads. No road network, lots of construction companies abandoned road projects because of government inability to release fund to them"

"They should construct more good roads and provide more buses at an affordable rate that can convey people to their destinations"

SUGGESTIONS ON ACCESS ROADS

"The government should create more access roads"

"Government should provide access roads and also enlighten the road users and drivers"
"Government should create more access roads"

"Government should improve on road accessibility"

SUGGESTIONS ON DRIVERS' BEHAVIOUR

"Drivers should be very careful when driving"

"Don't make calls (mobile phones) when driving"

"Government should provide access roads and also enlighten the road users and drivers"

"Government should put all mechanism in place to monitor road transport workers (drivers and conductors) and also put fixed price for transport fares"

"All drivers should go for mental test, drug law enforcement agency have to go to motor parks and arrest all drivers and conductors who smoke weed in the motor parks"

"The drivers should drive carefully and they should try to follow traffic rules all the time"

"Drivers should be properly trained"

"Drivers should be taught the various road signs"

"Drivers should be made to obey the traffic rules"

"Drivers should be careful"

"The drivers should be careful and also follow traffic laws and rules"

"If need be, drivers should be undergoing drugs and alcohol test in other to reduce the high percentage of accident in the state and the country at large"

"Driver should always obey traffic laws"

"Drivers should be careful and also follow traffic rules"

"Government should enlighten the commuters and drivers"

"Drivers should learn to obey traffic rules"

"The driver should be more careful and should obey traffic laws at all time"

SUGGESTIONS ON FUEL PRICE AFFECTING TRANSPORT

"Stabilise the fuel price and make it affordable"

"Government have to do something concerning scarcity of petroleum product. It brings about increase of transport fare, leading the masses to suffering"

"Government should try and reduce the cost of transport"

"Government should put all mechanism in place to monitor road transport workers (drivers and conductors) and also put fixed price for transport fares"

SUGGESTIONS ON TRAFFIC OFFICERS

"Traffic wardens should stop collecting money from public transport drivers"

"They should ensure that traffic officers are always there to perform their duties"

See Appendix 3 for the others

5.5. UGHELLI SURVEY RESULTS

Presented in table 5.3. are the Ughelli survey results. The analysis shows that most of the RII values are above 0.60, which indicates high performance except for five key performance indicators: Responses to Emergency, Ease of connection with other modes of public transport, Assistance and information for disabled/elderly people in Motor Parks, Security during evening/night and Accessibility during evening/night, which fell below 0.60 indicating low performance.

Table 5.3. Ughelli Analysis

UGHELLI PUBLIC TRANSPORT USERS' RATINGS										
NO.	**KEY PERFORMANCE INDICATORS/MEASURES**	Very Good 5	Good 4	Neutral 3	Poor 2	Very Poor 1	∑f	∑fx	Mean	RII Values
	TICKET RATINGS									
1	Ticket office	9	35	10	6	1	61	246	4.03	0.81
2	Number of ticket booths	6	31	10	11	4	62	210	3.39	0.68
3	Efficiency of ticketing staffs	10	29	13	9	2	63	225	3.57	0.71
4	Attitude of ticketing staffs	4	28	15	8	8	63	201	3.20	0.64
5	Information provided by ticketing staffs	7	29	12	11	1	60	210	3.5	0.70
	MOTOR PARK/BUS STATION/STOPS RATINGS									
6	Cleanliness/Maintenance of Motor Parks	11	38	8	7	1	65	246	3.78	0.77
7	Signage (easy to understand/clear and helpful)	5	28	15	9	2	59	202	3.42	0.68
8	Information about Service changes	6	29	12	11	2	60	206	3.43	0.69
9	Assistance/Customer service	9	20	20	9	2	60	205	3.42	0.68
10	Toilet Facilities	6	20	14	11	5	56	179	3.20	0.64
11	Refreshment Facilities	5	19	21	9	4	58	186	3.21	0.64
12	Waiting Rooms	8	33	10	9	1	61	221	3.62	0.72
13	Personal Security in Parks	8	29	6	12	8	63	206	3.27	0.65
14	Easy and Accessible complaint handling mechanism put in place	2	23	19	10	4	58	183	3.16	0.63
15	Facilities for Car parking	5	29	14	8	6	62	205	3.31	0.66
16	Responses to Emergency	4	17	16	17	6	60	176	2.93	0.59
17	Ease of connection with other modes of public transport	2	11	17	16	8	54	145	2.69	0.54
18	Assistance and information for disabled/elderly people in Motor Parks	5	22	8	14	10	59	175	2.97	0.59
19	Accessibility of Motor Parks	5	34	14	9	3	65	224	3.45	0.69
20	Personal Safety in Motor Parks	9	25	15	8	7	64	213	3.33	0.67
	VEHICLE RATINGS									
21	Cleanliness/Maintenance of Vehicles	4	31	15	11	4	65	215	3.31	0.66
22	Comfort of Seating space	8	30	11	11	4	64	219	3.42	0.68
23	Punctuality of Vehicles	3	26	19	13	3	64	205	3.20	0.64
24	Temperature On-board	2	13	22	18	6	61	170	2.79	0.56
25	On-board Facilities	4	7	17	15	4	47	133	2.82	0.57
26	Reliability of Vehicles	2	32	20	6	3	63	213	3.38	0.68
27	Frequency of Vehicles	2	29	23	10	1	65	216	3.32	0.66
28	Travel time	4	26	24	8	1	63	213	3.38	0.68
29	Assistance and information for disabled/elderly people On-board	3	23	14	10	7	57	176	3.09	0.62
30	Accessibility of Vehicles	3	34	15	9	2	63	216	3.43	0.69
31	Personal Safety On-board	4	27	20	10	3	64	211	3.30	0.66
32	Personal Security On-board	5	20	23	13	3	64	203	3.17	0.63
33	Journey Comfort	5	29	17	7	6	64	212	3.31	0.66
34	Security during evening/night	2	5	21	26	7	61	152	2.49	0.50
35	Accessibility during evening/night	2	5	22	25	7	61	153	2.51	0.50
36	Overall Satisfaction	0	25	28	11	0	64	206	3.21	0.64

CLUSTERING OF SUGGESTIONS

At the end of the questionnaire respondents were asked to write down any other suggestions they might have. Some of them did write down some suggestions, which have been clustered in this section.

SUGGESTIONS ON BAD ROADS

"There should be modern infrastructure in our parks, vehicles should be new, roads should be well tarred and most importantly drivers should be well trained to deliver good services to the people"

"Roads should be improved upon, emergency clinics or hospitals should be put on highways. Signs of dangers should be put on some distance to spots that are bad"

"Our roads should be maintained always for safe driving"

"The quality of our roads should be improved upon"

"The roads should be repaired and potholes fixed"

"Government should try to maintain our roads to avoid accidents"

"Make more improvement on the road public transport system
Government should repair road to standard"

"The roads should be repaired"
"The roads should be repaired, and heavy duty vehicles should have their own lanes"

"Unconstructed roads should be constructed"

"Construction of good road"

"Roads should be maintained regularly and potholes filled up"

SUGGESTIONS ON DRIVERS' BEHAVIOUR

"Drivers who disobey traffic rules should be dealt with"

"Train drivers to drive carefully"

"Drivers should be lectured and trained regularly"

"The drivers and the conductors should try to be polite to their customers"

"Drivers should try to avoid overloading of passengers in vehicle"

"Drivers should try to put their vehicle mechanically and electrically up to date"

SUGGESTIONS ON TRAFFIC SIGNS

"Traffic signs should be mounted on every road"

"Traffic lights should be on the roads to control traffic and help pedestrians to cross"

"Traffic lights should be installed on roads"

SUGGESTIONS ON TRANSPORT QUALITY

"Government should wake up to their responsibilities by upholding to their policies, legislations and standards towards a better establishment of transportation in Nigeria"

"Road transport in Nigeria should be like those obtainable in Europe and America"

"Government policies, standard and legislations should be adequately implemented"

"Make more improvement on the road public transport system
Government should repair road to standard"

"The public transport system is getting worse in addition to the hike in fuel prices"

"Be efficient and reliable for more better offers to the public"

"Federal road safety corps should be out and plain to punish defaulters of road regulations and be serious with their duties and not only be concerned with fines"

"The government should control the price level of transport fare"

"Improve on security, if possible each vehicle should have a security personnel in it"

See Appendix 3 the others

5.6. BENIN SURVEY RESULTS

Presented in table 5.4 are the Benin survey results. The analysis shows that most of the RII values are above 0.60, which indicates high performance except for two key performance indicators: Security during evening/night and Accessibility during evening/night, which fell below 0.60 indicating low performance.

Table 5.4. Benin Analysis

BENIN PUBLIC TRANSPORT USERS' RATINGS										
NO.	**KEY PERFORMANCE INDICATORS/MEASURES**	Very Good 5	Good 4	Neutral 3	Poor 2	Very Poor 1	∑f	∑fx	Mean	RII Values
	TICKET RATINGS									
1	Ticket office	9	24	7	3	2	45	170	3.78	0.76
2	Number of ticket booths	6	19	12	7	2	46	158	3.43	0.69
3	Efficiency of ticketing staffs	7	22	7	6	6	48	162	3.38	0.68
4	Attitude of ticketing staffs	4	25	7	6	6	48	159	3.31	0.65
5	Information provided by ticketing staffs	8	20	7	8	2	45	159	3.53	0.71
	MOTOR PARK/BUS STATION/STOPS RATINGS									
6	Cleanliness/Maintenance of Motor Parks	8	18	10	5	8	49	160	3.27	0.65
7	Signage (easy to understand/clear and helpful)	4	19	16	3	5	47	155	3.30	0.66
8	Information about Service changes	4	22	7	10	5	48	154	3.21	0.64
9	Assistance/Customer service	11	23	3	6	5	48	173	3.60	0.72
10	Toilet Facilities	3	13	10	9	10	45	125	2.78	0.56
11	Refreshment Facilities	6	14	10	10	4	44	140	3.18	0.64
12	Waiting Rooms	6	13	14	6	4	43	140	3.26	0.65
13	Personal Security in Parks	6	16	11	11	3	47	152	3.23	0.65
14	Easy and Accessible complaint handling mechanism put in place	7	13	11	7	5	43	139	3.23	0.65
15	Facilities for Car parking	6	21	7	7	4	45	153	3.4	0.68
16	Responses to Emergency	8	11	12	8	9	48	145	3.02	0.60
17	Ease of connection with other modes of public transport	5	19	12	9	3	48	158	3.29	0.66
18	Assistance and information for disabled/elderly people in Motor Parks	6	12	11	8	5	42	132	3.14	0.63
19	Accessibility of Motor Parks	6	18	15	4	4	47	159	3.38	0.68
20	Personal Safety in Motor Parks	6	15	9	17	2	49	153	3.12	0.62
	VEHICLE RATINGS									
21	Cleanliness/Maintenance of Vehicles	8	21	9	4	7	49	166	3.39	0.68
22	Comfort of Seating space	5	19	9	9	7	49	153	3.12	0.62
23	Punctuality of Vehicles	6	19	12	7	3	47	159	3.38	0.68
24	Temperature On-board	1	19	14	11	4	49	149	3.04	0.61
25	On-board Facilities	2	16	13	11	3	45	138	3.07	0.61
26	Reliability of Vehicles	4	24	12	5	2	47	164	3.49	0.70
27	Frequency of Vehicles	5	26	10	7	1	49	174	3.55	0.71
28	Travel time	4	26	9	7	2	48	167	3.48	0.70
29	Assistance and information for disabled/elderly people On-board	5	12	14	10	1	42	136	3.24	0.65
30	Accessibility of Vehicles	5	18	15	9	1	48	161	3.35	0.67
31	Personal Safety On-board	8	14	14	11	2	49	162	3.31	0.66
32	Personal Security On-board	3	18	13	13	2	49	154	3.14	0.63
33	Journey Comfort	8	19	11	5	5	48	164	3.42	0.68
34	Security during evening/night	2	15	12	11	9	49	137	2.80	0.56
35	Accessibility during evening/night	5	13	13	10	8	49	144	2.94	0.59
36	Overall Satisfaction	2	23	15	9	0	49	165	3.37	0.67

CLUSTERING OF SUGGESTIONS

At the end of the questionnaire respondents were asked to write down any other suggestions they might have. Some of them did write down some suggestions, which have been clustered in this section.

SUGGESTIONS ON BAD ROADS

"The government should sit up so as to focus on road maintenance in Nigeria"

"The bad condition of the roads should be improved in order to reduce road accidents"

SUGGESTIONS ON DRIVERS' BEHAVIOUR

"They should educate many of the public transport drivers because many don't know how to respect their passengers and they should tell them to be good examples to the passengers"

SUGGESTIONS ON TRANSPORT QUALITY

"The federal government should adequately improve on road transport to enhance easy transportation"

"The government should sit up so as to focus on road maintenance in Nigeria"

"They should improve road transport in the area of good vehicles plying the road in other to avoid frequent accidents"

See Appendix 3 the others

5.7. LAGOS SURVEY RESULTS

Presented in table 5.5. are the Lagos survey results. The analysis shows that most of the RII values are below 0.60, which indicates low performance compared to the results of the other cities, Warri, Ughelli and Benin which most of their RII values were above 0.60. This signifies that public transport system in Lagos is underperforming one of the main reasons being that Lagos is a megacity and more densely populated than the other cities (Warri, Ughelli, Benin), there is constant increase in the population of the city thereby making the city overpopulated, as a result of this the transport provision has not been able to match the population growth in the city.

However, there is a similar case of low RII values between them, which are the two performance indicators: Security during evening/night and Accessibility during evening/night, the RII of these two Key performance indicators fell below 0.60 in all the four cities, which is an indication that adequate security measures need to be put in place.

Table 5.5. Lagos Analysis

LAGOS PUBLIC TRANSPORT USERS' RATINGS										
NO.	**KEY PERFORMANCE INDICATORS/MEASURES**	Very Good 5	Good 4	Neutral 3	Poor 2	Very Poor 1	∑f	∑fx	Mean	RII Values
	TICKET RATINGS									
1	Ticket office	3	21	13	9	7	53	163	3.08	0.62
2	Number of ticket booths	2	14	15	31	4	66	177	2.68	0.54
3	Efficiency of ticketing staffs	3	20	16	27	6	72	203	2.82	0.56
4	Attitude of ticketing staffs	0	15	19	29	8	71	183	2.58	0.52
5	Information provided by ticketing staffs	3	17	18	12	7	57	168	2.95	0.59
	MOTOR PARK/BUS STATIONS/STOPS RATINGS									
6	Cleanliness/Maintenance of Motor Parks	5	12	12	32	15	76	188	2.47	0.49
7	Signage (easy to understand/clear and helpful)	2	23	19	19	6	69	203	2.94	0.59
8	Information about Service changes	1	14	17	31	7	70	181	2.59	0.52
9	Assistance/Customer service	0	15	17	28	6	66	173	2.62	0.52
10	Toilet Facilities	2	9	9	24	18	62	139	2.24	0.45
11	Refreshment Facilities	1	15	15	18	12	61	158	2.59	0.52
12	Waiting Rooms	2	8	16	25	6	57	146	2.56	0.51
13	Personal Security in Motor Parks	4	8	11	38	15	76	176	2.32	0.46
14	Easy and Accessible complaint handling mechanism put in place	2	8	23	20	10	63	161	2.56	0.51
15	Facilities for Car parking	3	15	15	23	11	67	117	2.64	0.35
16	Responses to Emergency	3	6	20	31	15	75	176	2.35	0.47
17	Ease of connection with other modes of public transport	1	14	25	20	10	70	186	2.66	0.53
18	Assistance and information for disabled/elderly people in Motor Parks	2	6	19	17	13	57	138	2.42	0.48
19	Accessibility of Motor Parks	2	23	24	14	10	73	212	2.90	0.58
20	Personal Safety in Motor Parks	2	12	24	30	6	74	196	2.65	0.53
	VEHICLE RATINGS									
21	Cleanliness/Maintenance of Vehicles	4	14	18	26	14	76	196	2.58	0.52
22	Comfort of Seating space	2	16	21	25	12	76	199	2.62	0.52
23	Punctuality of Vehicles	2	20	28	17	7	74	215	2.91	0.58
24	Temperature On-board	0	10	22	27	15	74	175	2.36	0.47
25	On-board Facilities	0	8	19	27	10	64	153	2.39	0.48
26	Reliability of Vehicles	0	18	29	18	11	76	206	2.71	0.52
27	Frequency of Vehicles	2	29	33	8	4	76	245	3.22	0.64
28	Travel time	5	22	22	17	5	71	218	3.07	0.61
29	Assistance and information for disabled/elderly people On-board	0	12	18	20	12	62	154	2.48	0.50
30	Accessibility of Vehicles	3	18	29	18	6	74	216	2.92	0.58
31	Personal Safety On-board	2	14	29	27	5	77	212	2.75	0.55
32	Personal Security On-board	3	16	22	29	6	76	209	2.75	0.55
33	Journey Comfort	2	16	28	21	9	76	209	2.75	0.55
34	Security during evening/night	0	9	25	25	16	75	177	2.36	0.47
35	Accessibility during evening/night	1	16	24	24	9	74	198	2.68	0.54
36	Overall Satisfaction	1	12	35	26	3	77	213	2.77	0.55

CLUSTERING OF SUGGESTIONS

At the end of the questionnaire respondents were asked to write down any other suggestions they might have. Some of them did write down some suggestions, which have been clustered in this section.

SUGGESTIONS ON BAD ROADS

"Government should work on the roads"

"The previous roads should be completed and not abandoned"

"Government should amend the road and enlighten drivers on proper use of road"

"The roads should be put in good shape"

"Intercity roads should be repaired. Many of the roads are very bad, e.g Ibadan Lagos road, Ilesa-Akure road etc."

SUGGESTIONS ON DRIVERS' BEHAVIOUR

"Proper implementation of road traffic rules and policies should be enforced, training should be given to all public transport owners or drivers in order to enforce changes in our public transport system"

"Every public transport driver should have an identification card and number, their records should be put down to avoid wrong did"

"Government should amend the road and enlighten drivers on proper use of road"

"Government should improve on public transport drivers and how to maintain traffic signs on the road"

"Government should put a favourable standard to the drivers and the masses to improve public transport. I'm pleading with the government to put an eye on the roads, it will do a lot of good"

"Drivers should always be retrained"

See Appendix 3 for the others

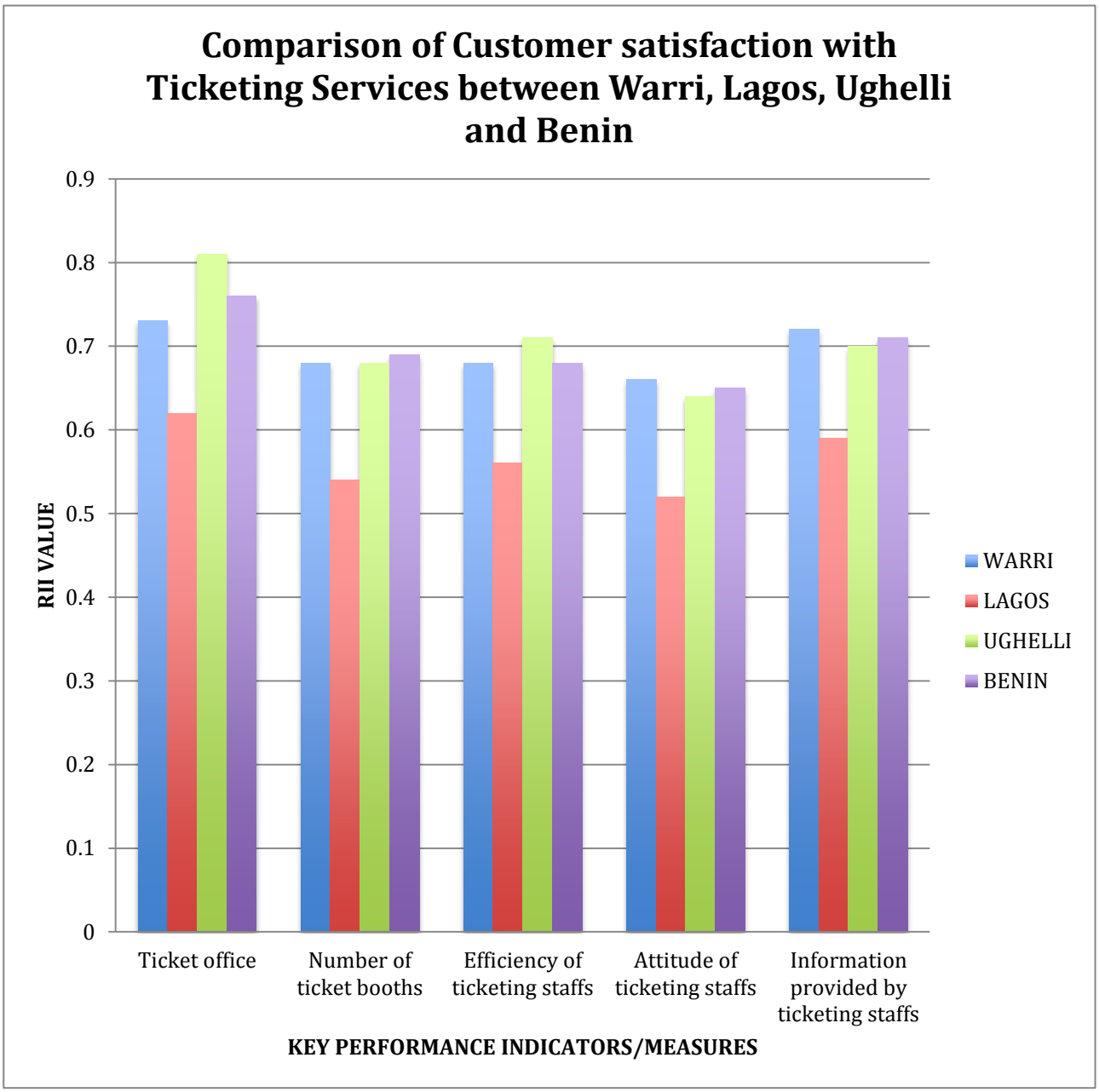

Figure 5.1. Benchmarking of ticketing services between Warri, Lagos, Ughelli and Benin

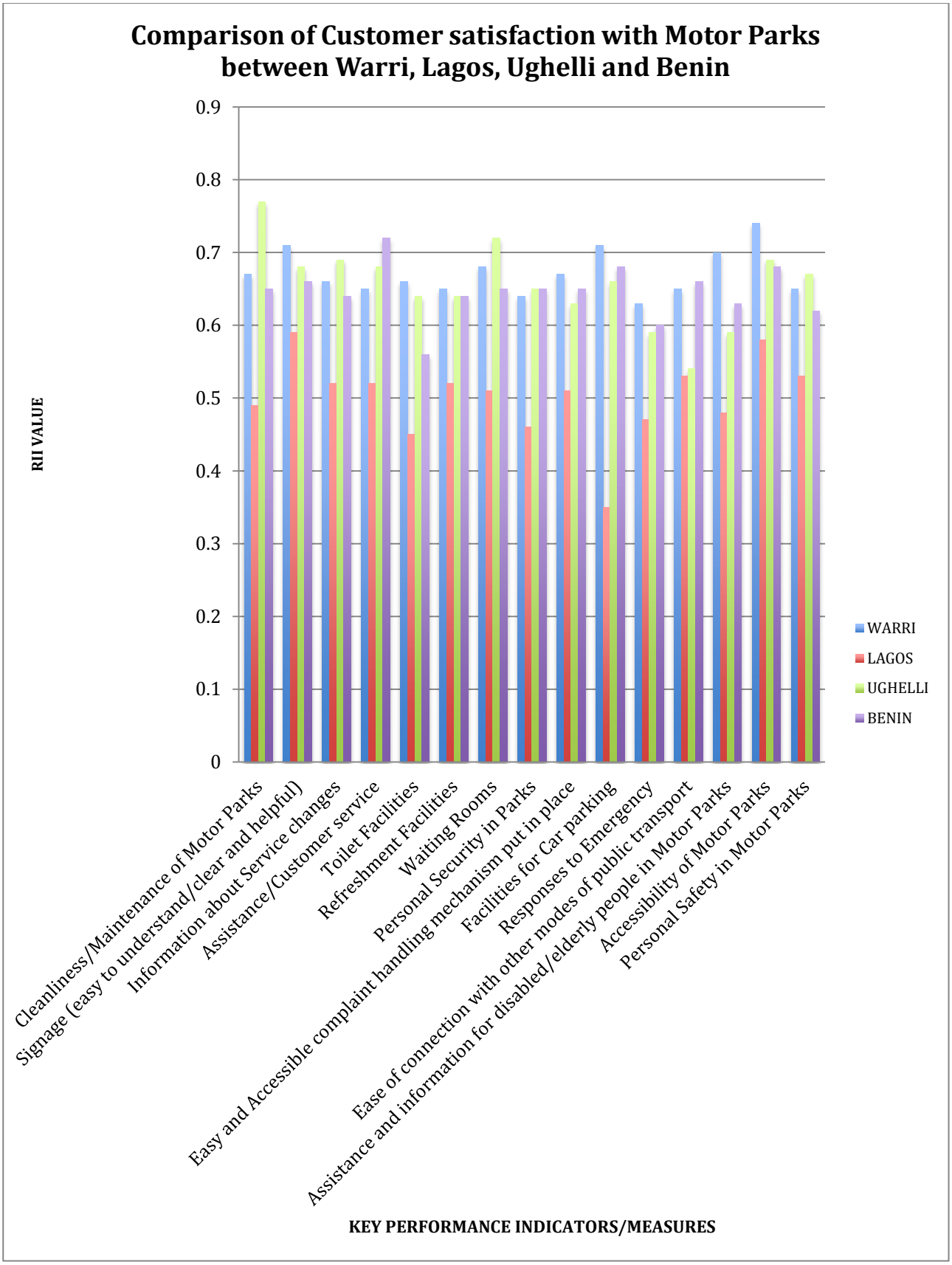

Figure 5.2. Benchmarking of Motor Parks/Bus stations/Stops

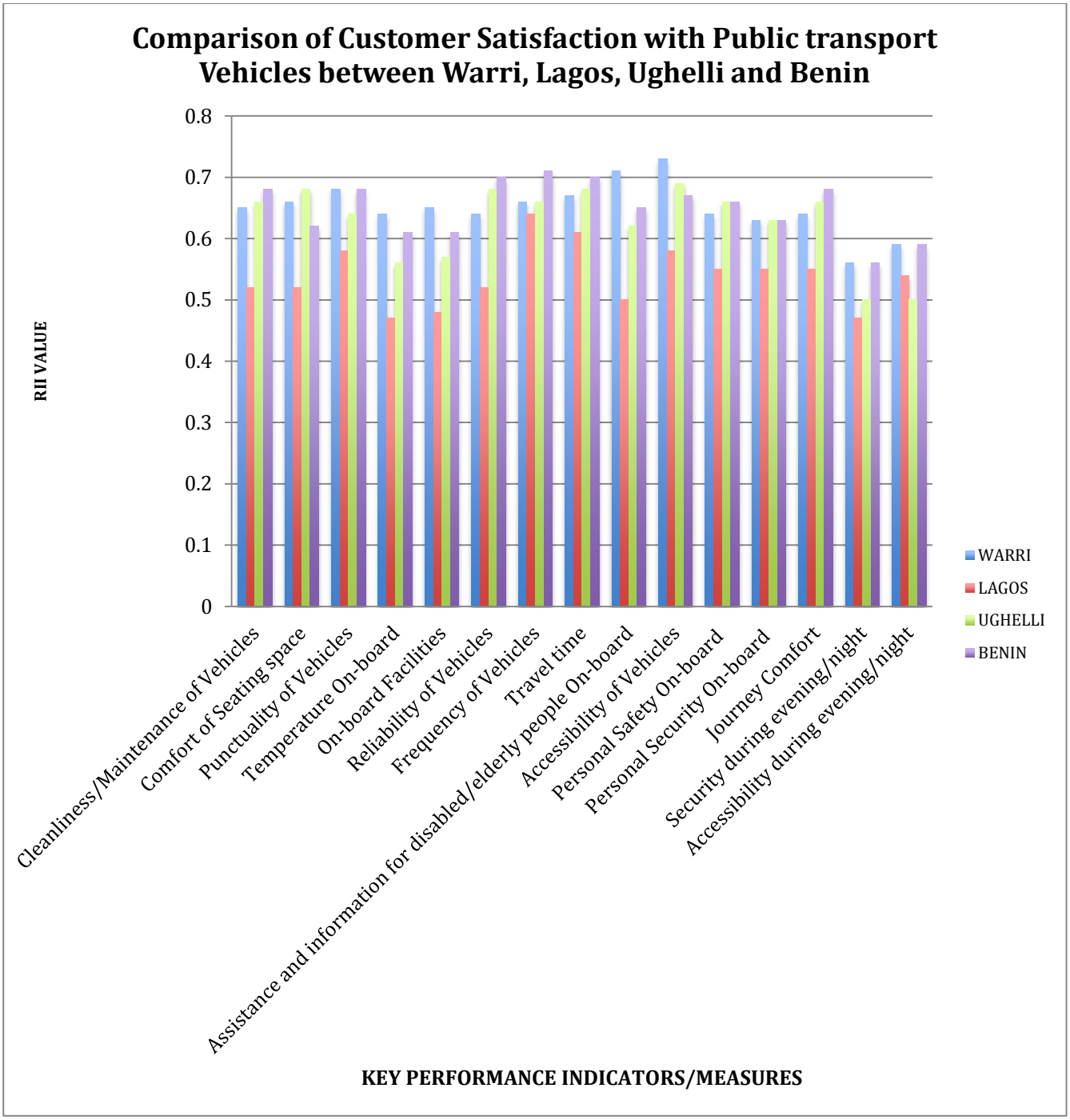

Figure 5.3. Benchmarking of Public transport Vehicles

UK SURVEY RESULTS

Presented in table 5.6 are the UK survey results. The analysis shows that all the RII values are above 0.80, which indicates a very high performance.

Table 5.6. UK Public transport Users' ratings (PF, 2014).

UK (GREATER MANCHESTER) PUBLIC TRANSPORT USERS' RATINGS										
NO.	**PERFORMANCE MEASURES / INDICATORS**	Very Satisfied 5	Fairly Satisfied 4	Neither/ Nor 3	Dissatisfied 2	Very Dissatisfied 1	∑f	∑fx	Mean	RII Values
	BUS STOPS									
1	Accessibility of Motor Parks/Bus stops	969.8 (52%)	652.75 (35%)	186.5 (10%)	55.95 (3%)	0 (0%)	1865	8131.4	4.36	0.87
2	Cleanliness/Maintenance of Motor Parks/Bus stops	619.74 (33%)	788.76 (42%)	319.26 (17%)	169.02 (9%)	0 (0%)	1878	7549.56	4.02	0.80
3	Information about Service changes	609.51 (33%)	720.33 (39%)	277.05 (15%)	221.64 (12%)	0 (0%)	1847	7203.3	3.9	0.78
4	Personal Safety in Motor Parks/Bus stops	696.34 (37%)	771.62 (41%)	301.12 (16%)	131.74 (7%)	0 (0%)	1882	7735.02	4.11	0.82
	ONBOARD THE BUS/VEHICLE									
5	Accessibility of Vehicles	1108.08 (54%)	738.72 (36%)	143.64 (7%)	61.56 (3%)	0 (0%)	2052	9049.32	4.41	0.88
6	Cleanliness/Maintenance of Vehicles	646.66 (31%)	938.7 (45%)	271.18 (13%)	229.46 (11%)	0 (0%)	2086	8262.21	4.0	0.79
7	Comfort of Seating space	738.72 (36%)	820.8 (40%)	266.76 (13%)	205.2 (10%)	0 (0%)	2052	8187.48	4.0	0.78
8	Temperature On-board	736.92 (36%)	818.8 (40%)	307.05 (15%)	184.23 (9%)	0 (0%)	2047	8249.41	4.03	0.81
9	Personal Security On-board	837.63 (41%)	837.63 (41%)	306.45 (15%)	61.29 (3%)	0 (0%)	2043	8580.6	4.2	0.84

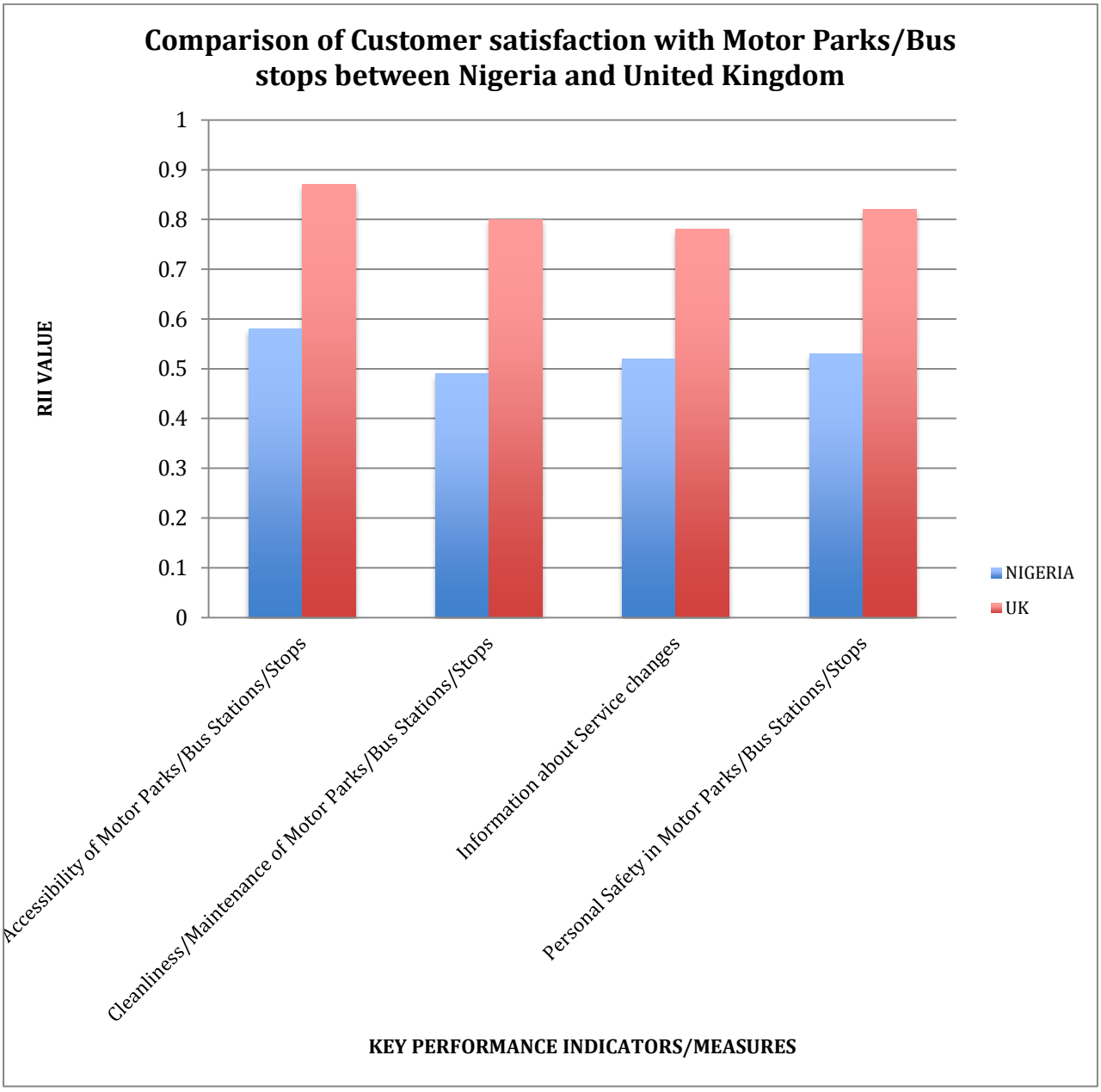

Figure 5.4. Benchmarking of Customer Satisfaction with Motor Parks/Bus stations/Stops between Nigeria and UK

Presented in figure 5.4 is the comparison of the performance of Motor Parks/Bus stations/Stops between Nigeria and United Kingdom with the following key performance measures/indicators: Accessibility, Cleanliness/Maintenance, Information, Personal Safety. It can be seen that the UK RII values are higher than the Nigeria RII values, which clearly shows that transport users in UK are more satisfied with transport

services provided in the UK than the Nigerian transport users are of the transport services in Nigeria.

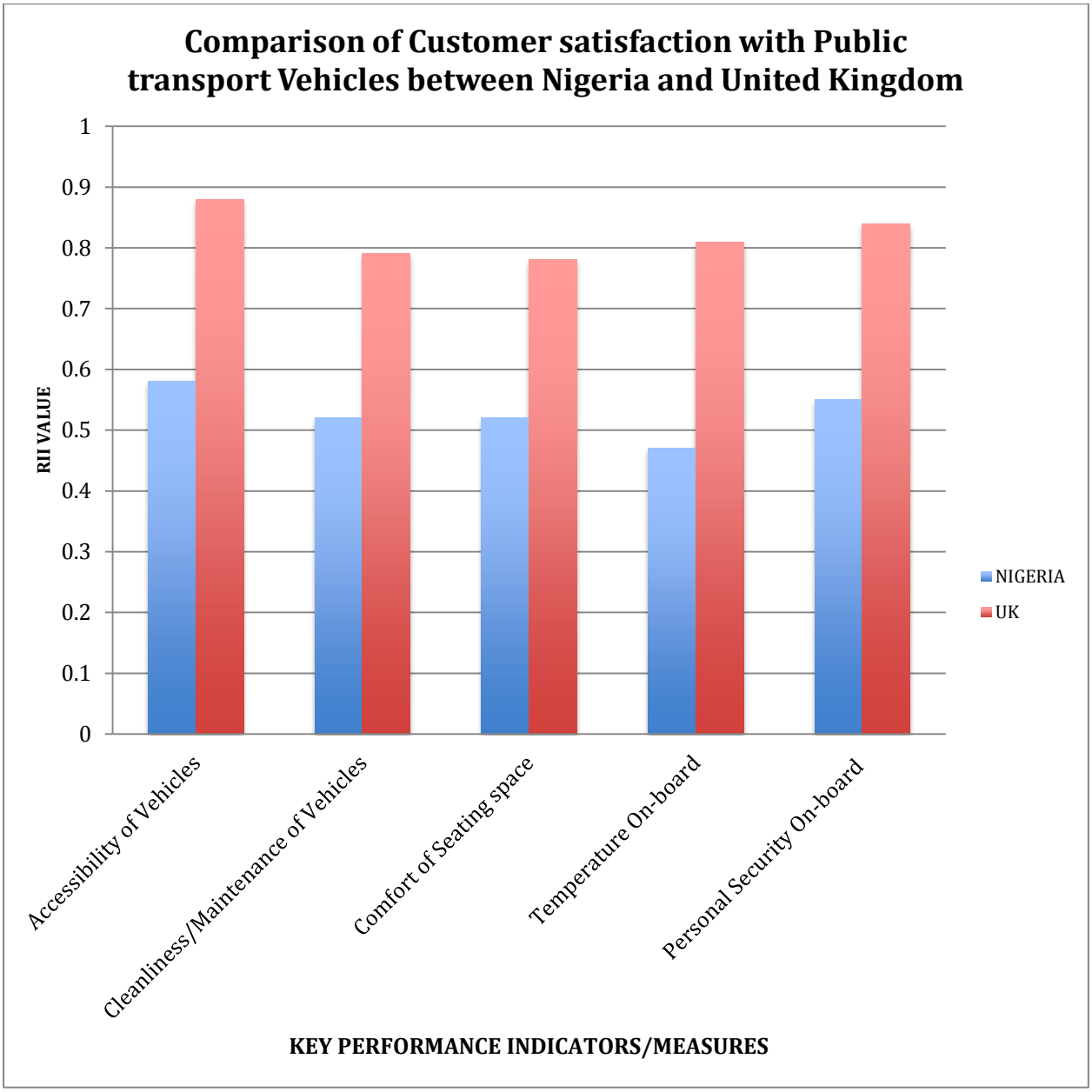

Figure 5.5. Benchmarking of customer satisfaction with public transport vehicles between Nigeria and UK

Presented in figure 5.5. is the comparison of the performance of public transport Vehicles between Nigeria and United Kingdom with the following KPIs: Accessibility, Cleanliness/Maintenance, Comfort of seating space, Temperature On-board, Personal Security On-board. It can

be seen that the UK RII values are higher than the Nigeria RII values, which clearly shows that transport users in UK are more satisfied with transport services provided in the UK than the Nigerian transport users are of the transport services in Nigeria.

This supports the study by Aderamo; the study used data collected from passengers, through questionnaire administration, to determine users' views on transport services provided in Nigeria. Data were also collected from records of the Transport Corporation relating to passenger traffic, bus fleet and types, fare charged and organisational structure to assess the operations of the Corporation. Results of the study revealed that operations of government owned Transport Corporations are defective in service delivery and reliability and states that in order to make public transport service in Nigeria responsive to the mobility needs of the people, improvements are needed in the operations (Aderamo, 2010).

Adetunji also conducted a study on the quality of urban transport services in Nigeria which says; "Urban transport services in Nigeria is inadequate both in quality and quantitative terms considering the rate of population growth and the economic condition of an average Nigerian on the affordability of transport services to meet his or her travel demands over the past four decades" (Adetunji, 2013).

Efobi and Anierobi's also conducted a study on maintenance culture of public sector operations, which says; "Though the Nigerian public mass transportation system has evolved over the years, it still faces huge challenges which bother much on maintenance culture. Maintenance for the mode and means of mass transportation facilities in Nigeria is being

relegated to the background while favoring new procurements" (Efobi and Anierobi, 2014).

ACCESSIBILITY OF VEHICLES

Figure 5.6. Public transport vehicle in Nigeria (not easily accessible).

The figure 5.6 shows a public transport vehicle in Lagos Nigeria that stopped along the way to pick a passenger. It can clearly be seen how high the vehicle is from the ground and the way the passenger is struggling to enter. Public transport vehicles in Nigeria are not accessible and not disabled friendly, public transport drivers stop anywhere along the road to pick passengers as you can see in the picture because there are no proper bus stops.

Figure 5.7. Public transport vehicle in UK (easily accessible) (AE, 2013).

The figure above shows a public transport vehicle in United Kingdom that stopped at the bus stop to pick a passenger. It can clearly be seen from the picture how very accessible the vehicle is. The bus stop has got a shelter and seats where passengers can seat while waiting for the vehicle to arrive.

The United Nations estimate that between 6 and 10% of the population in developing countries have a disability, some 400 million people worldwide. The challenges faced by these people vary considerably but the shortage of reliable data makes it difficult to form a useful picture of the scale and nature of their needs. Indications are that, generally in low-

income countries, 40 to 50% of all disabled people have sensory disabilities (including blindness, low vision, deafness, poor hearing and impaired speech); while 20 to 50% people have various physical disabilities, and in the order of 7 to 15% have cognitive disabilities (Venter et al., 2002).

In developing/low-income countries, disabled people are more likely to be poorer than the rest of the population. Case studies in a number of countries show that higher disability rates are associated with higher illiteracy, poor nutritional status, lower inoculation and immunization coverage, higher unemployment rates, and lower occupational mobility, among other characteristics (Elwan, 1999).

The livelihoods and economic opportunities of disabled people in developing countries are often worse because they are more likely to be excluded from services, social contact and community activities. This exclusion in turn leads to reduced social, cultural, educational and economic opportunities; thereby increasing the risk that people with disability will further fall into poverty. Such exclusion also imposes direct costs on society by reducing the economic and social output, not only of those with disabilities but also of those who care for them and whose productive employment may be reduced as a result (Metts, 2000).

Disabled and elderly people in low-income countries around the world have starkly emphasized the constraints, which they suffer:

"Disabled people are not seen as human beings; they are isolated at home and not sent to school" (Kabale focus group Uganda, 1998).

"The disabled remain isolated. Lack of special transport confines them to a single neighborhood, special school, small church, local polyclinic, and small shop" (Armenia 1995).

These quotations are part of the extensive testimony given in 'Voices of the Poor' – a major international consultation carried out at the turn of the Millennium to inform the international development agenda (Narayan, 2000).

Inclusive transport systems are all the more critical in reducing the isolation, vulnerability and dependency of people with disability – thereby helping to improve the lives of many of the world's poorest. However, the lack of basic data is a serious impediment to estimating the proper nature of demand for more inclusive transport, so as to respond to the actual needs of all people whose access and mobility are severely constrained. It also inhibits measurement of the impact of so doing (Rickert, 2001). Meeting the needs of people with disability is largely seen as a welfare issue in most countries especially developing countries and even basic good practice in meeting those needs is rarely recognized, let alone implemented. As a result, inclusive transport systems have generally not been given significant priority in planning, design and construction in developing countries.

CLEANLINESS/MAINTENANCE OF VEHICLES

Figure 5.8. Public transport Vehicles in Nigeria (Old and Rickety, no proper maintenance)

Figure 5.9. Public transport vehicle in UK (Good and comfortable)

PERSONAL SECURITY ON-BOARD

Frequent announcements of various types of criminal activities in Nigeria public transport over the years have become a disturbing issue to users, non-users and particularly the policy makers. Facts show that the rate of crime in public transportation system in Nigeria is on the increase. This have gone beyond local or national discourse, as International communities keep given warning notifications about the insecurity of Nigerian public transport services. Travelers have being warned to avoid night travel, and about poor modes of public transport and infrastructure and driving conditions (Okunola, 2009; Omidiji and Ibitoye, 2010; Iweze, 2011).

Threats to lives while using public transport have become a disturbing issue to most Nigerians as the country has lost a good number of her productive population to the incidences of crime on-board public transportation, which most times result to road crashes. These issues in recent time have dominated an array of debates involving policy makers and city managers. Presently, the situation has taken different dimension with the use of emerging public transport modes to perpetuate criminal activities and it makes live in most Nigerian cities like Lagos and other developing ones more frightening. It should be noted that, not only is the incidence of crime becoming more frequent and alarming, the nature of the crimes; especially physical assault, sexual harassment, pick-pocketing etc., have become more heinous (Okunola, 2009; Omidiji and Ibitoye, 2010; Iweze, 2011).

5.4. SPEARMAN'S RANK CORRELATION COEFFICIENT

The Spearman's rank correlation coefficient was used to test if there is a positive correlation between the Nigerian transport users satisfaction ratings and United Kingdom transport users satisfaction ratings. Since the United Kingdom rankings are much higher than the Nigerian rankings, it simply means that there are better public transport services in the United Kingdom than Nigeria hence the high satisfaction rankings in the United Kingdom and low satisfaction rankings in Nigeria. There was a perfect positive correlation (r_s =1) for Motor parks/Bus stops and very strong positive correlation (r_s = 0.9) for Vehicles between Nigeria and United Kingdom. In other words Nigeria can adopt the United Kingdom public transport strategy into its transport system because it will have a very positive impact on the development of the Nigerian transport sector. The Spearman's rank correlation coefficient was calculated using the following formula:

$$r_S = 1 - \frac{6\sum d^2}{n(n^2-1)}$$

Where:

d^2 = square of the differences in ranking ($R_x - R_y$)

n = number of variables to be correlated

(RGS, 2014)

Table 5.7. Correlation of the Low Satisfaction ratings of Nigerian respondents and the high satisfaction ratings of the UK respondents

No.	**Correlation of Motor parks/bus stops/stops**	X (Nigeria)	Y (United Kingdom)	Rank X	Rank Y	d	d^2
1	Accessibility of Motor Parks/Bus stops	212	8131.40	4	4	0	0
2	Cleanliness/Maintenance of Motor Parks/Bus stops	188	7549.56	2	2	0	0
3	Information about Service changes	181	7203.30	1	1	0	0
4	Personal Safety in Motor Parks/Bus stops	196	7735.02	3	3	0	0
							$\sum d^2 = 0$

$(r_s = 1)$

Table 5.8. Correlation of the Low Satisfaction ratings of Nigerian respondents and the high satisfaction ratings of the UK respondents

No.	**Correlation of Vehicles**	X (Nigeria)	Y (United Kingdom)	Rank X	Rank Y	d	d^2
1	Accessibility of Vehicles	216	9049.32	5	5	0	0
2	Cleanliness/Maintenance of Vehicles	196	8262.21	2	3	1	1
3	Comfort of Seating space	199	8187.48	3	1	2	4
4	Temperature On-board	175	8249.41	1	2	-1	1
5	Personal Security On-board	209	8580.6	4	4	0	0
							$\sum d^2 = 6$

$(r_s = 0.9)$

See Appendix 1 for the detailed calculation

5.5. ROAD TRANSPORT SECURITY DATA ANALYSIS

Table 5.9. Number of Highway robbery incidents in Nigeria: 2009 – 2014

Year	Number of Highway armed robbery Incidents
2009	3
2010	5
2011	10
2012	28
2013	18
2014	35

(Akubo and Olumide, 2014; Olupohunda, 2013; Akoni, 2012; Ogwuda, 2009)

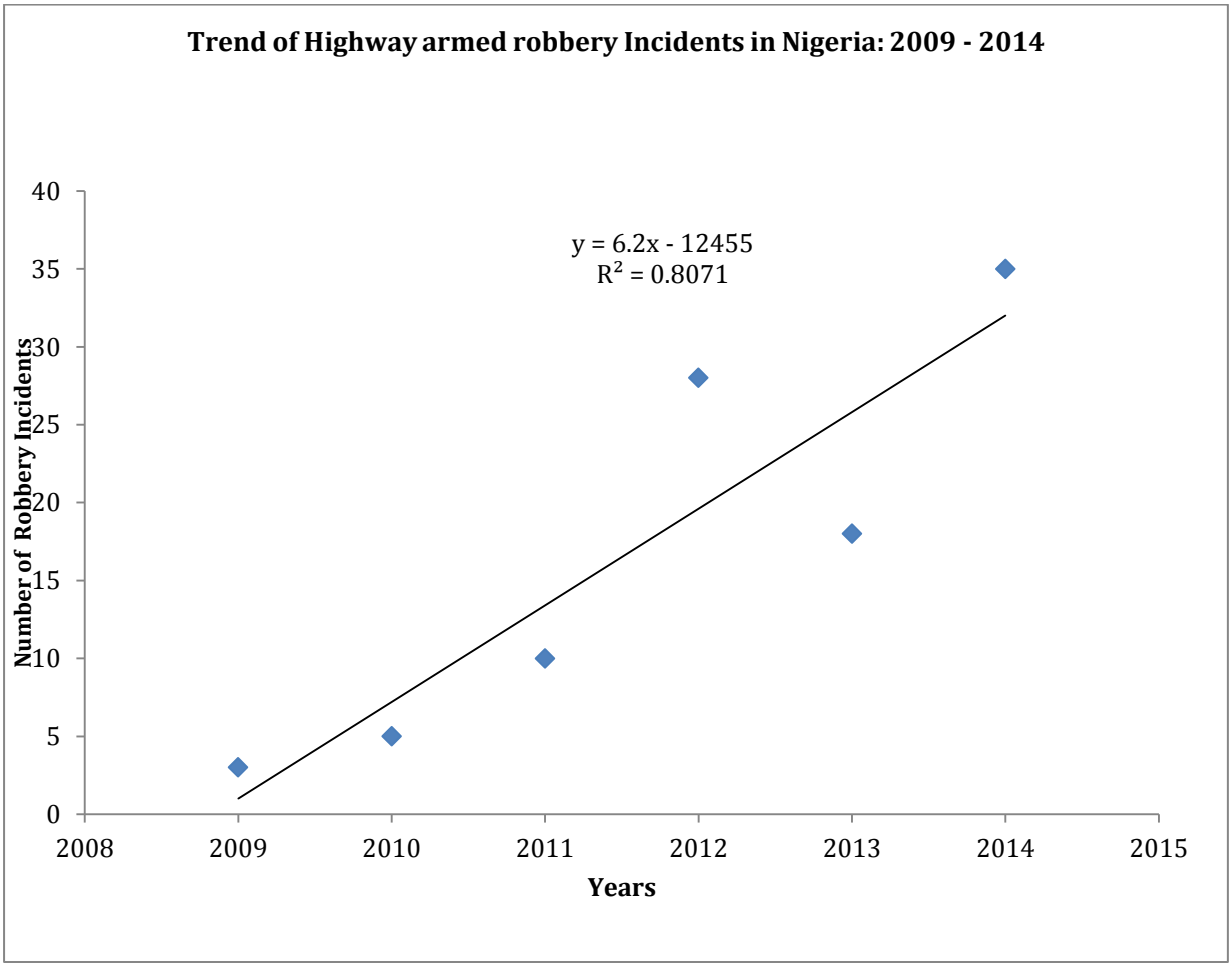

Figure 5.10. Trend of Highway armed robbery Incidents in Nigeria: 2009-2014.

The regression equation has been used to predict future robbery Incidents: 2015 – 2030

$y = 6.2x - 12455$

Where
y = Number of incidents
x = Year

$R^2 = 0.80708$, this shows that the model is a good fit and that Highway robbery incidents are being explained by the independent variable with at least 80%

See Appendix 2 for the regression statistics

Table 5.10. Predicted Number of Highway Armed Robbery Incidents: 2015 - 2030

Year	**Predicted Number of Highway Armed Robbery Incidents**
2015	38
2016	44
2017	50
2018	57
2019	63
2020	69
2021	75
2022	81
2023	88
2024	94
2025	100
2026	106
2027	112
2028	119
2029	125
2030	131

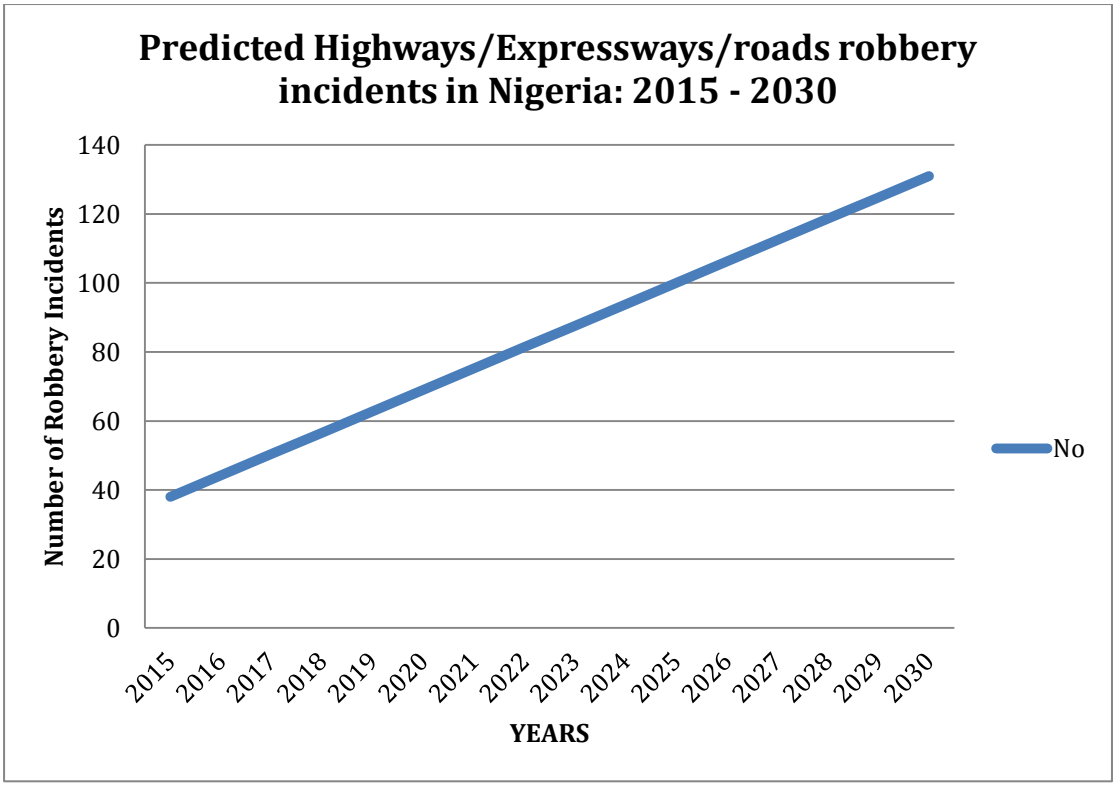

Figure 5.11. Predicted Highways/Expressways/roads robbery incidents in Nigeria: 2015 - 2030.

Presented in table 5.10 are the highways where the robbery incidents of 2009 – 2014 occurred. It can be seen that Lagos-Ore-Benin expressway has the highest number of robbery incidents, which makes the route a dangerous one and has even been tagged the "devils highway" by travellers who ply the route often.

Table 5.11. Highways where the robbery incidents occurred

No.	**Highways**	**Number of Robbery Incidents 2009 – 2014**	**Rank**
1	Lagos-Ore-Benin expressway	29	1
2	Okene-Lokoja-Abuja higway	19	2
3	Lagos-Ibadan expressway	9	3
4	Abuja-Kaduna highway	6	4
5	Benin-Asaba Expressway	4	5
6	Enugu-Port Harcourt expressway	3	6
7	Lagos-Seme Highway	3	6
8	Abeokuta-Lagos Road	2	7
9	Benin-Auchi road	2	7
10	Orhia-Abraka-Eku Road	2	7
11	Kaduna-Keffi high way	2	7
12	Oronigbe-Umutu road, Delta state	1	8
13	Summit Express Road, Asaba	1	8
14	Aladja road, Delta state	1	8
15	Ewohimi-Ubiaja road, Edo state	1	8
16	Kigo road, Sabon Gari Kaduna	1	8
17	Sabongida Ora-Iruekpen Road Edo state	1	8
18	Mile2-Badagry Expressway	1	8
19	Enugu-Nsukka Road	1	8
20	ldofian- Koko highway on Ajase-lpo road in Kwara State	1	8
21	Ughelli-Patani highway	1	8
22	Keffi-Masaka Highway	1	8
23	Benin-Onitsha Expressway	1	8
24	Orhokpokpor-Agbarho and Uwiamughe-Agbarho on the East-West road	1	8
25	Lagos-Abuja Expressway	1	8
26	Ososa Junction, Ijebu Ode	1	8
27	Apapa-Oshodi expressway	1	8
28	Osogbo-Ibadan road	1	8
29	Omagwa-Ozuoha Road, Port Harcourt, Rivers State	1	8
	TOTAL	**99**	

SUMMARY

The data collected have been analysed and discussed in this chapter, performance measurement and benchmarking carried out. Overall, it has been confirmed from the research findings that the performance of the Nigerian transport system does not meet the expectations of the users, hence the low RII values, but the reverse is the case for the UK hence the high RII values. Having seen that Nigeria adopting the UK's transport strategy will have a positive impact on the Nigerian transport sector, Strategic Action Plans have been proposed for the Nigerian transport sector, these are presented in the next chapter.

CHAPTER 6 - THE PROPOSED STRATEGIC ACTION PLAN AND RESEARCH VALIDATION

6.1. INTRODUCTION

This chapter presents the proposed Strategic action plans and the validation process. Having done the benchmarking and found out that if Nigeria adopts the UK transport strategy; it will have a very positive impact on the Nigerian transport sector, Strategic action plans have been proposed for the Nigerian transport sector to assist in enhancing the performance of sector.

Having developed Strategic action plans, there is need to test the validity before it can be more widely disseminated. The aim of the validation process is to determine whether the proposed Strategic action plans are reliable. Validation is vital because it reveals the potential reliability of the research. Furthermore, validation provides a solid background against which the research findings could be generalised.

6.2. STRATEGIC ACTION PLANS

The strategic action plan that has been proposed for the Nigerian transport sector will assist in the development of an effective and efficient transport system in Nigeria. This will also contribute to the Vision: 2030 Transport foresight for Nigeria. The Action plans are presented in table 6.1-6.6.

SECURITY

Table 6.1. Action plans to improve the Transport Security

NO.	NECESSARY ACTIONS
1	Increase the presence of well equipped police officers/ security personnel along highways
2	Introduce undercover security officers to apprehend offenders/robbers operating onboard vehicles and at facilities as some criminals board vehicles as passengers and along the way rob people of their valuables
3	Increase natural surveillance through design (design measures should be introduced in areas where incidents concentrated)
4	Install CCTV in motor parks/bus stations and vehicles
5	Install passenger alarms, emergency phones and intercoms at motor parks/bus stations and on vehicles
6	Reduce overcrowding in motor parks/bus stations
7	Separate waiting passengers from other members of the public e.g. installing shelters or barriers

PUBLIC TRANSPORT VEHICLES

Table 6.2. Action plans to improve the performance of Public transport Vehicles

NO.	NECESSARY ACTIONS
	MAINTENANCE/OPERATION
1	Develop partnership working with public transport operators to monitor and improve service quality (frequency/punctuality /reliability/integration/air quality/maintenance)
2	Introduce live, real time information on bus location and route planning
3	Develop high vehicle standards, including the sitting environment, cleanliness and Wi-Fi
4	Vehicles should be tested annually
	ACCESSIBILITY/ASSISTANCE FOR DISABLED/ELDERLY
5	Introduction of Low-floor/Accessible vehicles for the sake of the disabled/elderly
6	Commercial bus operators need to be encouraged to invest in modern accessible vehicles
7	Priority seating in the vehicles for the disabled/elderly
8	Provide free door-door transport service for disabled/elderly people who have difficulties accessing public transport
9	Commercial bus operators need to be encouraged to invest in appropriate training in customer care for all passengers, particularly elderly and disabled customers, to ensure that they are treated with respect and understanding
10	Provide the best and simplest to use concessionary fares scheme for the disabled/elderly

MOTOR PARKS/BUS STATIONS/STOPS

Table 6.3. Action plans to improve Motor parks/Bus stations/Stops

NO.	NECESSARY ACTIONS
1	Improve the quality of Motor parks/Bus Station/Bus stops; Customer focused, high quality services, respecting passengers' needs and with responsive customer complaints handling
2	Improve publicity materials (timetables/leaflets/maps/bus stop information)
3	Improve passenger environment (safety/security audits on bus, at bus station/stops)
4	Develop standards/criteria for bus stops/shelters including parking restrictions
5	Provide passengers with a waiting environment that is comfortable, secure and provides easy access to vehicles whilst projecting an image of high quality
6	Bus stops should be built

TICKETING AND FARES

Table 6.4. Action plans to improve ticketing and fares

NO.	NECESSARY ACTIONS
1.	Develop a clear, transparent and simple mechanism for fare pricing; which still allows operators to set levels themselves. This could include an upper price limit and some form of banding/zoning
2	Develop an integrated smart ticketing system that would enable customers to use a single smart ticket, mobile phone or other means of payment, on any bus
3	Develop return ticketing system
4	Developing ticket schemes such as travel-cards and smartcards
5	Develop a transport policy on fares and ticketing where appropriate
6	Training of staffs

DRIVERS

Table 6.5. Action plans to improve driver behaviour and standard

NO.	NECESSARY ACTIONS
1.	Qualification standards should be set for drivers
2.	Drivers should be made to undergo drugs and alcohol test

ANNUAL SURVEYS

Table 6.6. Action plan to help in monitoring the progress/improvements of the transport sector

NO.	NECESSARY ACTIONS
1.	National Transport Survey should be carried out annually

6.3. THE CONCEPT OF VALIDATION

As earlier stated in the introduction part of this chapter, Validation is a key part of the Strategic Action Plans development process, which increases confidence in the Strategic Action Plans and makes it more valuable (Kennedy et al., 2005). Structured Questionnaire was designed with the Strategic Action plans which the researcher took to the federal ministry of transport (FMOT) at Abuja Nigeria and other public transport operators in Nigeria. There were 25 experts/stakeholders who participated in the validation process, fifteen (15) were from the Federal ministry of transport (FMOT) and ten (10) were public transport operators who own fleet of vehicles that ply the roads on daily basis. 10 of the experts/stakeholders participated in the previous survey. The following sections provide a description of the methods adopted for the validation exercise.

6.4. METHODS ADOPTED FOR THE VALIDATION

Two methods were adopted for the validation exercise, which includes external and internal validation.

6.4.1. EXTERNAL VALIDATION

Brinberg and McGrath (1985) state that the essence of external validation is to gain confidence in the findings and what they mean. It is about ensuring the robustness of the research and about assessing its generalizability, which is a quality standard in quantitative research. (Rosenthal and Rosnow, 1991; Fellows and Liu, 1997).

External validity was achieved in this research by comparing the findings with similar findings from previous studies (Eisenhardt, 1989). Some participants who took part in the first survey also took part in the Strategic Action Plans ‘ validation process by filling the questionnaire.

The response from the questionnaire survey participants creates an assurance that the proposed Strategic Action Plans will be useful in terms of assisting in the development of an effective and efficient transport system in Nigeria.

6.4.1.1. PARTICIPANT'S RESPONSE

The response from the participants suggests that the proposed strategic action plan is valid. Furthermore, as can be observed from the tables, most of the experts/stakeholders Strongly Agreed with proposed strategic action plans. This suggests that policy makers would regard this research as a very useful tool for decision-making. This represents a positive contribution to the body of knowledge. The validation results are presented in the following tables 6.7-6.12.

SECURITY

Table 6.7. Security validation results

NO.	NECESSARY ACTIONS								
		Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1	∑f	∑fx	Mean
1	Increase the presence of well equipped police officers/ security personnel along highways	18 (72%)	7 (28%)	0 (0%)	0 (0%)	0 (0%)	25	118	4.72
2	Introduce undercover security officers to apprehend offenders/robbers operating onboard vehicles and at facilities as some criminals board vehicles as passengers and along the way rob people of their valuables	18 (72%)	7 (28%)	0 (0%)	0 (0%)	0 (0%)	25	118	4.72
3	Increase natural surveillance through design (design measures should be introduced in areas where incidents concentrated)	17 (|%)	4 (16%)	4 (16%)	0 (0%)	0 (0%)	25	117	4.68
4	Install CCTV in motor parks/bus stations and vehicles	18 (72%)	6 (24%)	1 (4%)	0 (0%)	0 (0%)	25	117	4.68
5	Install passenger alarms, emergency phones and intercoms at motor parks/bus stations and on vehicles	14 (56%)	8 (32%)	2 (8%)	1 (4%)	0 (0%)	25	110	4.4
6	Reduce overcrowding in motor parks/bus stations	16 (64%)	6 (24%)	3 (12%)	0 (0%)	0 (0%)	25	113	4.52
7	Separate waiting passengers from other members of the public e.g. installing shelters or barriers	13 (52%	8 (32%)	3 (12%)	1 (4%)	0 (0%)	25	108	4.32

FURTHER SUGGESTIONS ON SECURITY

"There is need for the introduction of intelligent transportation because in this system, all the activities that are taking place at the motor parks/bus stops as well as highway is being monitored and recorded. This will help immensely in checkmating criminal tendencies and enhance security surveillance" [Assistant Chief Admin. Officer, FMOT].

"Tag should be given to passengers to identify them from others" [Principal Confidential Secretary, FMOT].

"Installation of Security cameras and CCTV will go a long way to cub down crimes on our highways" [Mechanical Engineer 1, FMOT].

"More Security personnel on the road is a very good idea and will deter armed robbers as long as the security personnel themselves are disciplined and will carry out their duties effectively and won't collect bribes like some of the police men who mount road block to extort money from drivers instead of protecting travellers" [Transport Operator].

PUBLIC TRANSPORT VEHICLES

Table 6.8. Public transport Vehicles' results

NO.	NECESSARY ACTIONS								
		Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1	∑f	∑fx	Mean
	MAINTENANCE/OPERATION								
1	Develop partnership working with public transport operators to monitor and improve service quality (frequency/punctuality /reliability/integration/air quality/maintenance)	14 (56%)	8 (32%)	3 (12%)	0 (0%)	0 (0%)	25	111	4.44
2	Introduce live, real time information on bus location and route planning	15 (60%)	8 (32%)	2 (8%)	0 (0%)	0 (0%)	25	113	4.52
3	Develop high vehicle standards, including the sitting environment, cleanliness and Wi-Fi	16 (64%)	7 (28%)	2 (8%)	0 (0%)	0 (0%)	25	114	4.56
4	Vehicles should be tested annually	21 (84%)	2 (8%)	2 (8%)	0 (0%)	0 (0%)	25	119	4.76
	ACCESSIBILITY/ASSISTANCE FOR DISABLED/ELDERLY								
5	Introduction of Low-floor/Accessible vehicles for the sake of the disabled/elderly	18 (72%)	6 (24%)	1 (4%)	0 (0%)	0 (0%)	25	117	4.68
6	Commercial bus operators need to be encouraged to invest in modern accessible vehicles	16 (64%)	5 (20%)	3 (12%)	1 (4%)	0 (0%	25	111	4.44
7	Priority seating in the vehicles for the disabled/elderly	17 (68%)	7 (28%)	0 (0%)	1 (4%)	0 (0%)	25	115	4.6
8	Provide free door-door transport service for disabled/elderly people who have difficulties accessing public transport	15 (60%)	4 (16%)	5 (20%)	1 (4%)	0 (0%)	25	112	4.48
9	Commercial bus operators need to be encouraged to invest in appropriate training in customer care for all passengers, particularly elderly and disabled customers, to ensure that they are treated with respect and understanding	18 (72%)	5 (20%)	2 (8%)	0 (0%)	0 (0%)	25	116	4.64
10	Provide the best and simplest to use concessionary fares scheme for the disabled/elderly	14 (56%)	8 (32%)	2 (8%)	1 (4%)	0 (0%)	25	111	4.44

FURTHER SUGGESTIONS FOR PUBLIC TRANSPORT VEHICLES

"Transit Parks should be constructed along the highways with all the facilities such as clinic, hotel, mechanic workshop etc. this will be a rest point for drivers on long journey to reduce fatigue associated with the driving.

There should be a policy that will regulate the entire transport sector of the economy.

The concept of inter-modalism should be encouraged to enhance service delivery in the transport sector" [Assistant Chief Admin. FMOT].

"Disabled/Elderly should be provided with ID cards" [Principal Confidential Secretary, FMOT].

"In order to be able to confidently invest in low floor vehicles which will be more disabled friendly, the bad roads have to be repaired for the vehicles to operate smoothly." [Transport Operator].

"Overloading of vehicles should be reduced" [Administration Officer, FMOT].

"Put up measures to check excess loading of vehicles" [Mechanical Engineer 1, FMOT].

MOTOR PARKS/BUS STATIONS/STOPS

Table 6.9. Motor Parks/Bus stations/Stops Validation Results

NO.	NECESSARY ACTIONS								
		Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1	∑f	∑fx	Mean
1	Improve the quality of Motor parks/Bus Station/Bus stops; Customer focused, high quality services, respecting passengers' needs and with responsive customer complaints handling	17 (68%)	7 (28%)	1 (4%)	0 (0%)	0 (0%)	25	116	4.64
2	Improve publicity materials (timetables/leaflets/maps/bus stop information)	11 (44%)	10 (40%)	4 (16%)	0 (0%)	0 (0%)	25	107	4.28
3	Improve passenger environment (safety/security audits on bus, at bus station/stops)	16 (64%)	7 (28%)	2 (8%)	0 (0%)	0 (0%)	25	114	4.56
4	Develop standards/criteria for bus stops/shelters including parking restrictions	14 (56%)	10 (40%)	0 (0%)	1 (4%)	0 (0%)	25	112	4.48
5	Provide passengers with a waiting environment that is comfortable, secure and provides easy access to vehicles whilst projecting an image of high quality	16 (64%)	8 (32%)	1 (4%)	0 (0%)	0 (0%)	25	115	4.6
6	Bus stops should be built	19 (76%)	3 (12%)	3 (12%)	0 (0%)	0 (0%)	25	116	4.64

"Very nice ideas well done on your research" [Transport Operator].

TICKETING AND FARES

Table 6.10. Ticketing and Fares Validation results

NO.	NECESSARY ACTIONS								
		Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1	∑f	∑fx	Mean
1.	Develop a clear, transparent and simple mechanism for fare pricing; which still allows operators to set levels themselves. This could include an upper price limit and some form of banding/zoning	12 (48%)	9 (36%)	3 (12%)	0 (0%)	1 (4%)	25	105	4.2
2	Develop an integrated smart ticketing system that would enable customers to use a single smart ticket, mobile phone or other means of payment, on any bus	13 (52%)	8 (32%)	1 (4%)	3 (12%)	0 (0%)	25	106	4.24
3	Develop return ticketing system	16 (64%)	3 (12%)	5 (20%)	1 (4%)	0 (0%)	25	109	4.36
4	Developing ticket schemes such as travel cards and smartcards	14 (56%)	10 (40%)	1 (4%)	0 (0%)	0 (0%)	25	113	4.52
5	Develop a transport policy on fares and ticketing where appropriate	14 (56%)	8 (32%)	3 (12%)	0 (0%)	0 (0%)	25	111	4.44
6	Training of staffs	18 (72%)	5 (20%)	2 (8%)	0 (0%)	0 (0%)	25	116	4.64

FURTHER SUGGESTIONS FOR TICKETING AND FARES

"Transport fare should also be reduced" [Administration Officer].

DRIVERS

Table 6.11. Drivers Validation results

NO.	NECESSARY ACTIONS								
		Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1	∑f	∑fx	Mean
1.	Qualification standards should be set for drivers	19 (76%)	4 (16%)	2 (8%)	0 (0%)	0 (0%)	25	117	4.68
2.	Drivers should be made to undergo drugs and alcohol test	19 (76%)	6 (24%)	0 (0%)	0 (0%)	0 (0%)	25	119	4.76

FURTHER SUGGESTIONS FOR DRIVERS

"Furthermore, the license of any driver who tested positive to drugs or alcohol should be seized and revoked" [Mechanical Engineer, FMOT].

"The policy on the attachment of safety officer should be developed to checkmate the activities of drivers while driving as to comply with the driving ethics.
Road worthiness trust should be encouraged to enhance safety on the road". [Assistant Chief Admin. Officer, FMOT].

Train drivers adequately please [Mechanical engineer 1, FMOT].

ANNUAL SURVEYS

Table 6.12. Annual survey validation results

NO.	NECESSARY ACTIONS								
		Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1	∑f	∑fx	Mean
1.	National Transport Survey should be carried out annually	18 (72%)	4 (16%)	3 (12%)	0 (0%)	0 (0%)	25	115	4.6

"Well done on your research this will go a long way in improving the Nigerian transport sector" [Assistant Chief Data Processing officer, FMOT].

6.4.2. INTERNAL VALIDATION

Rosenthal and Rosnow (1991) define internal validity as the degree of validity of statements made about whether X causes Y, the primary concern being to rule out plausible rival hypotheses. Egbu (2007) notes that internal validation seeks to outline the strength of the model/framework as well as assess the literature search. Internal validity concerns the credibility of the inferences made from the data while external validity concerns the generalisability of the findings (Eisenhardt and Howe, 1992; Kirk and Miller, 1986). Interestingly, whilst researchers agree that both internal and external validation are important for validating a research process, there are limited literatures that describe in detail what form the internal validation process should take (Fellows et al., 2002).

In order to achieve internal validity, this research has adopted some measures. One of them being that most of the key findings of the research were supported by comprehensive literature. Secondly, some of the findings of this research have been published in a number of peer reviewed journals and conference proceedings. Disseminating the research findings to the academic community through the publication of articles in academic journals and conference proceedings involved a review and assessment of the validity of the research and its findings by independent referees. Xiao (2002) states that peer review in this manner provides an opportunity for the methodologies, meanings and interpretation of the research to be questioned. Runeson and Loosemore (1999) refer to this dissemination process as a process of critical inquiry, which is meant, in theory, to provide an informed, fair, reasonable and professional opinion about the merits of the research. Fenn (1997) has observed that peer review is used as the gold standard throughout

academia in the UK. Feedback from such a process helps to enrich research work and potentially improves its findings (Alkass et al., 1998).

In all cases the referees provided feedback outlining the basis of their decision, often raising issues, which range from trivial to fundamental and were incorporated in this research to improve its validity. The remarks and feedback from the academic community during the presentation and review that have been incorporated in the research and into this thesis, have significantly improved the research, making the findings more robust and reliable, as argued by Xiao (2002). Acceptance of the articles for publication indicates that this research is scholarly and academically valid.

SUMMARY

Presented in this chapter is the proposed strategic action plans and validation process.

CHAPTER 7 - CONCLUSION AND RECOMMENDATION

7.0. INTRODUCTION

This chapter is aimed at concluding the research by returning to the research question and objectives as they were originated in the first chapter. It provides a general explanation of the research questions and explains how the results meet the research objectives. Furthermore the contribution to knowledge made by this study is discussed in detail followed by the review of potential future research work. Finally, the research limitations and recommendations are presented.

7.1. OVERVIEW OF THE RESEARCH

The research process started by introducing the research, the need for to undertake the research which lead to the research questions, aim and objectives which are stated in chapter one. Chapter two presented a general overview of the Nigerian transport sector, which comprises of Road, Rail, Air and Water transport sub-sectors and the various challenges facing the transport sector, which lead to the research rationale. Chapter three presented an overview of KPIs and Benchmarking. Case studies of benchmarking were presented and KPIs that were identified and developed for the Nigerian transport sector during the course of this research, which were used in the survey were also presented. The research philosophy, approach, strategy, data collection methods, ethical issues and the benchmarking concept applied in this research were presented in chapter four. The data collected were analysed in chapter five, performance measurement and benchmarking carried out. The proposed strategic action plans and validation process were presented in chapter six. Chapter seven concluded the research

along with recommendations and also identified areas for further research.

7.2. ACHIEVING THE RESEARCH QUESTIONS AND THE RESEARCH OBJECTIVES

The research seeks to relate this conclusion to the purpose of the initial inquiry, which was framed in the questions:

1. What are the Key Performance Indicators (KPIs) that can be used to manage the performance of the Nigerian transport sector?
2. Can performance-benchmarking techniques be applied in this sector, taking on-board the National prevailing conditions that exist in Nigeria?
3. What are the challenges with respect to developing a benchmarking methodology for the Nigerian transport sector?
4. What are the steps inherent in a benchmarking exercise and how can it be applied to the Nigerian transport sector?
5. What are the techniques and method for developing a benchmarking methodology that will be relevant to sectorial performance improvement and policymaking in Nigeria?

In answering these questions, the following objectives have been set.

1. Develop and establish Key Performance Indicators (KPIs) that can be used to manage the performance of the Nigerian transport sector.
2. Analyse the National prevailing conditions existing in Nigeria and the influence it will have on the transport sector benchmarking.

3. Study and critically examine the challenges facing the Nigerian transport sector with respect to developing a benchmarking methodology.
4. Develop a benchmarking model (for the benchmarking exercise) that will be applicable to the Nigerian transport sector.
5. Develop a benchmarking methodology that will serve as a tool for the overall and continuous improvement of the Nigerian transport sector performance and policymaking.

1. Develop and establish Key Performance Indicators (KPIs) that can be used to manage the performance of the Nigerian transport sector.

This research objective was achieved through critical review of literature and the survey. The comprehensive review on the Nigerian transport identified the inherent problems facing the Nigerian transport sector causing the sector to perform below standards. This was confirmed by the survey, as the developed/identified performance indicators/measures were used for the survey in order to measure the performance of the Nigerian transport sector with United Kingdom as a best practice country.

2. Analyse the National prevailing conditions existing in Nigeria and the influence it will have on the transport sector benchmarking.

This research objective was achieved through the literature review and the survey. The survey respondents stated some of the prevailing conditions in the country, some of which were cases of fuel scarcity and insecurity, which have had negative effects on the performance of the transport sector.

3. Study and critically examine the challenges facing the Nigerian transport sector with respect to developing a benchmarking methodology.

This was achieved through literature review and the survey. The critical review on the Nigerian transport identified the challenges facing the Nigerian transport sector, which was confirmed from empirical evidence gotten from the survey. Majority of the Nigerian survey respondents were not satisfied with the transport services provided in Nigeria.

4. Develop a benchmarking model (for the benchmarking exercise) that will be applicable to the Nigerian transport sector.

This was achieved by literature review on benchmarking techniques, the various types of benchmarking were reviewed and it identified the "strategic benchmarking" as the best benchmarking technique that is best suited and applicable for the Nigerian sector benchmarking as Nigeria is a developing country seeking to learn from developed and best practice countries, hence the benchmarking model was developed based on this fact.

5. Develop a benchmarking methodology that will serve as a tool for the overall and continuous improvement of the Nigerian transport sector performance and policymaking.

This was achieved from the benchmarking, thus a strategic action plan was proposed for the Nigerian transport sector, which will assist policy makers in making decisions and in turn improve the overall performance of the Nigerian transport sector.

7.3. CONTRIBUTION TO KNOWLEDGE

Throughout the work undertaken in this research, several contributions have been made to the existing body of knowledge and understanding. The main areas of this contribution to knowledge in the improvement of the Nigerian transport sector is summarised in the following subsections.

1. Development of Key performance Indicators/measures

This study has contributed to the body of knowledge by the development/identification and establishment of the key performance indicators, which are relevant to the Nigerian transport sector, meaning they can be used for continuous performance measurement and benchmarking of the sector. These KPIs have been validated through the survey.

2. Proposal of a Strategic Action Plan

It was observed that no previous research has put forward a strategic action plan to enhance the performance of the Nigerian transport sector. Hence this research is considered a pioneer study in the development of a strategic action plan to enhance the performance of the Nigerian transport sector, in order to achieve an efficient and effective transport system, whilst placing much emphasis on the area of security. The incessant armed robbery attacks on Nigerian highways has lead to loss of many lives and properties. Most research focused on the causes of road traffic crashes in Nigeria always forget to mention the role armed robbers play in some of these road crashes. This research has identified and emphasised the need to put proactive measures in place against the insecurity in order to achieve peaceful commutes.

3. Paper Publications

Publications are key pieces of evidence to substantiate a claim that a study has made a contribution to knowledge. A total of five papers have been published in relation to this research; these consist of two conference papers and three journal papers. Having been exposed to peer review before publication; this further supports the claim that knowledge has been created and peers have affirmed that. Below is a list of papers that have been published.

1. Onatere, Joyce .O., Christopher Nwagboso and Panagiotis Georgakis. (2014). Performance Indicators for Rail Transport System in Nigeria. T&DI Congress 2014, pp.753-764. Paper presented at the T&DI Congress 2014, June 8th-11th, Orlando Florida, United States of America. Title: Planes, Trains and Automobiles: Connections to Future Developments. Organised by the Transport and development Institute (T&DI) of the American society of Civil Engineers (ASCE).

2. Onatere, Joyce .O., Christopher Nwagboso and Panagiotis Georgakis. (2014). Performance Indicators for Urban transport development in Nigeria. WIT Transactions on The Built Environment, Vol. 138, 2014 WIT Press www.witpress.com, ISSN 1743-3509 (Online), pp.555-568. Paper presented at the Urban Transport Conference 2014, May 28th-30th, The Algarve Portugal. Title: Urban Transport and the Environment Organised by Wesssex Institute of Technology (WIT).

3. Onatere-Ubrurhe, Joyce .O. (2015). Model Formulation for Predicting Future Highway Armed Robbery Incidents in Nigeria. Journal of Developing Country Studies, ISSN 2224-607X (Paper), ISSN 2225-0565 (Online), Vol. 5, No. 19, pp.78-81.

4. Onatere-Ubrurhe, Joyce .O. (2016). Travel Without Fear: A Proposed Strategic Action Plan for Monitoring Road Transport Security in Nigeria. Journal of Developing Country Studies, ISSN 2224-607X (Paper), ISSN 2225-0565 (Online), Vol. 6, No. 1, pp.124-130.

5. Onatere-Ubrurhe, Joyce .O., Christopher Nwagboso and Panagiotis Georgakis. (2016). Benchmarking Users' Satisfaction with Public Transport Services in Nigeria. Journal of Economics and Sustainable Development, ISSN 2222-1700 (Paper), ISSN 2222-2855 (Online), Vol. 7, No.10, pp.161-168.

7.4. RESEARCH LIMITATIONS

This research has some limitations that need to be stated:

1. The collection of empirical data depended mainly on the level of access that was granted to the researcher. Therefore, the participants could have hidden some vital information from the researcher, which could possibly have improved the research outcome, without the researcher's knowledge.

2. Despite the fact that issues regarding public transport performance in Nigeria are homogeneous, it might still be difficult to generalise Nigeria's results to other developing countries of the world without conducting additional research.

3. The researcher would have preferred administering the questionnaire through online survey kit or emails, which might have been more economical and quicker, but Nigeria being a developing country, most people don't have easy access to the Internet because its expensive, so the

researcher had to print and administer the questionnaires in person, which was expensive and very stressful. Furthermore, the survey was carried out in four different cities, which means the researcher had to travel to each of these cities to distribute the questionnaires herself, which was another hassle. The data collection would have been much easier and more respondents gotten if it were possible to send the questionnaires by post or email.

7.5. CONCLUSION

The conclusion of this research is summarised as follows:

There is hardly any human society or human settlement system that can function efficiently and effectively without adequate, reliable, safe and affordable transport system. The most fundamental reason for this being the catalytic effect of transport development on socio-economic growth and development. Transport also plays a significant role in territories as well as in promoting regional cooperation (through the flow of people and goods along the import – export corridors of neighbouring countries. Precisely, transport development is central in the developmental process for the economy and society to grow healthily.

However, while the developed countries like the United Kingdom have an organized transport system, the reverse is the case for developing countries like Nigeria whose major mode of transport is the road, being responsible for about ninety per cent (90%) of both freight and passenger transport, which has led to an unprecedented level of congestion on the roads; increasing road traffic crashes and in the main citizens suffers with high levels of local associated pollution and low security levels such as the incessant robbery attacks on highways. Hence the rationale for this research.

The benchmarking of Nigeria and United Kingdom transport users' satisfaction has opened an avenue for improvement in the Nigerian transport sector. The proposed strategic action plan will assist policy makers in making decisions and in turn increase customer satisfaction.

7.6. RECOMMENDATIONS

Annual transport users' survey should be introduced in Nigeria as a way of monitoring the progress of the transport sector and performance measurement. Performance measurement should not be a once in a life time event, rather it should be a continuous process, it should be done from time to time to keep the organisation on track, in order to enhance continuous improvement.

7.7. FURTHER RESEARCH

Further research should be focused on the area of rail and maritime transport in Nigeria, especially rail transport because improvement in the rail transport sector will bring about much improvement in urban transport. The KPIs that have been developed/identified in this study can be used for further performance measurement and Benchmarking. Further research should be done to address the research limitations highlighted in this thesis.

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APPENDICES

APPENDIX 1: SPEARMAN'S RANK CORRELATION COEEFICIENT

$$r_s = 1 - \frac{(6\sum d^2)}{n(n^2-1)}$$

Where:
d^2 = square of the differences in ranking ($R_x - R_y$)
n = number of variables to be correlated

No.	**Correlation of Motor parks/bus stops/stops**	X (Nigeria)	Y (United Kingdom)	Rank X	Rank Y	d	d^2
1	Accessibility of Motor Parks/Bus stops	212	8131.40	4	4	0	0
2	Cleanliness/Maintenance of Motor Parks/Bus stops	188	7549.56	2	2	0	0
3	Information about Service changes	181	7203.30	1	1	0	0
4	Personal Safety in Motor Parks/Bus stops	196	7735.02	3	3	0	0
							$\sum d^2 = 0$

$$1 - \frac{(6x0)}{4x(4^2-1)} =$$

$$\frac{0}{60} = 0$$

$$1 - 0 = 1$$

$$r_s = 1$$

No.	**Correlation of Vehicles**	X (Nigeria)	Y (United Kingdom)	Rank X	Rank Y	d	d^2
1	Accessibility of Vehicles	216	9049.32	5	5	0	0
2	Cleanliness/Maintenance of Vehicles	196	8262.21	2	3	1	1
3	Comfort of Seating space	199	8187.48	3	1	2	4
4	Temperature On-board	175	8249.41	1	2	-1	1
5	Personal Security On-board	209	8580.6	4	4	0	0
							$\sum d^2 = 6$

$$1 - \frac{12}{5x24} =$$

$$\frac{12}{120} = 0.1$$

$$1 - 0.1 = 0.9$$

$$r_s = 0.9$$

APPENDIX 2: REGRESSION ANALYSIS

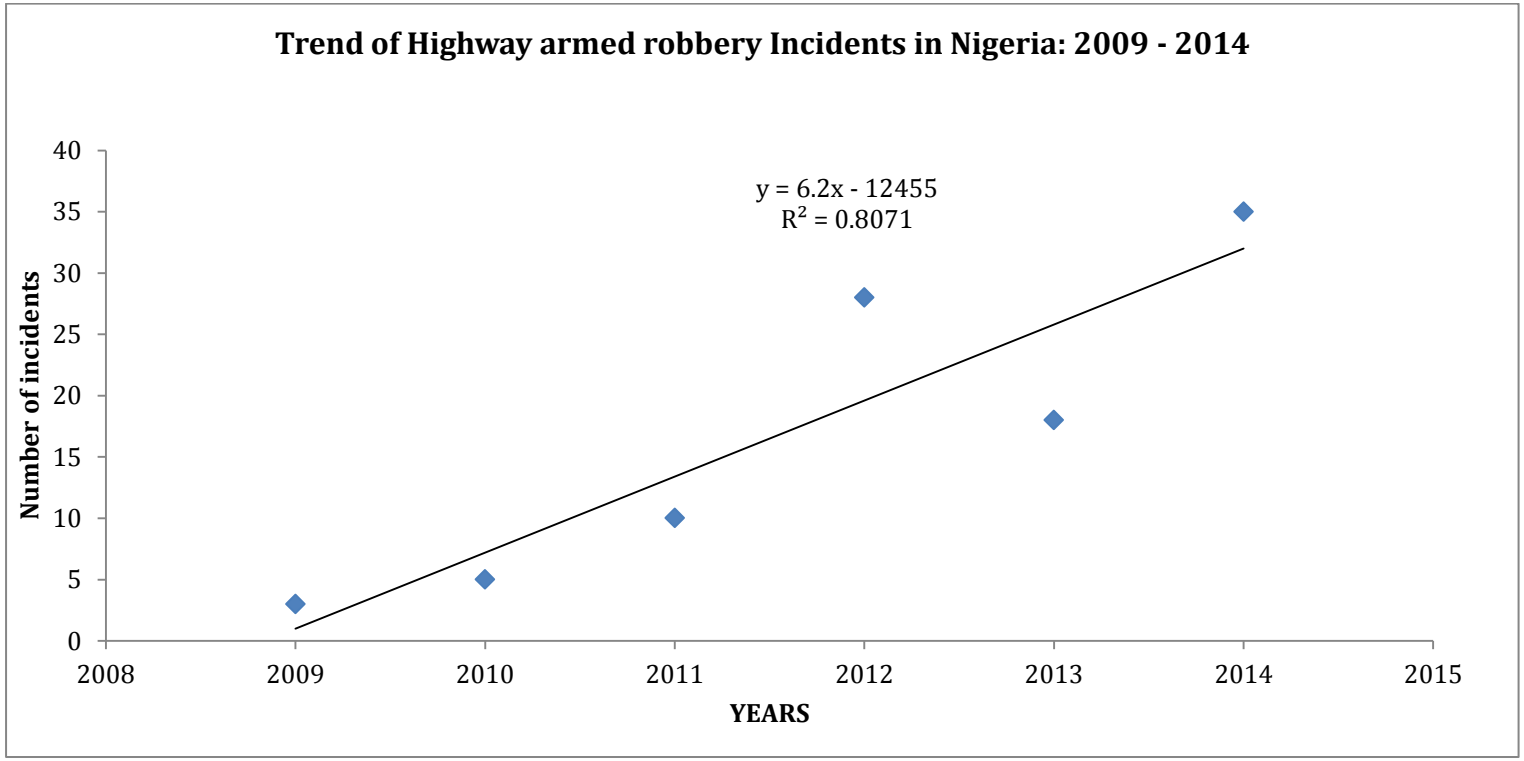
Year	**Number of Highway armed robbery Incidents**
2009	3
2010	5
2011	10
2012	28
2013	18
2014	35

Regression Statistics	
Multiple R	0.898375525
R Square	0.807078584
Adjusted R Square	0.75884823
Standard Error	6.340346994
Observations	6

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	672.7	672.7	16.73383085	0.014966536
Residual	4	160.8	40.2		
Total	5	833.5			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-12454.8	3048.696524	-4.085286909	0.015033088	-20919.33854	-3990.261458	-20919.33854	-3990.261458
year	6.2	1.515632824	4.090700532	0.014966536	1.991928665	10.40807134	1.991928665	10.40807134


Trend of Highway armed robbery Incidents in Nigeria: 2009 - 2014
y = 6.2x - 12455
R² = 0.8071
Number of incidents
YEARS
0
5
10
15
20
25
30
35
40
2008
2009
2010
2011
2012
2013
2014
2015

APPENDIX 3: SOME OF THE RESPONDENTS SUGGESTIONS AND COMPLAINTS FOR/ABOUT THE NIGERIAN TRANSPORT SYSTEM

NUMBER	COMPLAINTS AND SUGGESTIONS
WARRI	**ROAD TRANSPORT**
1	Government should try and reduce the cost of transport
2	Stabilise the fuel price and make it affordable
3	Repair the roads and make them motorable
4	Need improvement
5	Traffic wardens should stop collecting money from public transport drivers
6	Nigerian roads are very bad
7	Government should endeavour to maintain our road for easy flow of traffic
8	Government should have to construct service lane on the major roads
9	Drivers should be very careful when driving
10	Don't make calls (mobile phones) when driving
11	The government should create more access roads
12	Vehicle inspection officers just have to inspect vehicles before allowing them to operate on the road
13	Take precaution
14	Awareness campaign is very important.
15	Our road network is very bad
16	Improvement should be made by the government
17	Road users should also encourage drivers by not controlling them especially since they are on wheel
18	Government should provide access roads and also enlighten the road users and drivers
19	Government should create more access roads
20	Government should put all mechanism in place to monitor road transport workers (drivers and conductors) and also put fixed price for transport fares
21	Government have to do something concerning scarcity of petroleum product. It brings about increase of transport fare, leading the masses to suffering
22	All drivers should go for mental test, drug law enforcement agency have to go to motor parks and arrest all drivers and conductors who smoke weed in the motor parks
23	No good roads, no good transport. So government should take it

	as a point of duty to maintain roads
24	The drivers should drive carefully and they should try to follow traffic rules all the time
25	Our roads are not motorable
26	Kekenapep (Tricycles) does not have parks neither do they make use of bus stops, they stop anywhere they deem fit
27	No park for kekenapep (Tricycles) but it's the cheapest means of transport in Delta State at the moment
28	Government need to assist the unemployed youth by giving them kekenapep on hired purchase
29	Improvement should be made on road transport
30	State and Federal government should try and make our roads motorable
31	Drivers should be properly trained
32	Drivers should be taught the various road signs
33	Drivers should be made to obey the traffic rules
34	Our roads should be properly marked and road signs should be put in place
35	So many bad roads in the country, government should do something about them
36	Drivers should be careful
37	The drivers should be careful and also follow traffic laws and rules
38	If need be, drivers should be undergoing drugs and alcohol test in other to reduce the high percentage of accident in the state and the country at large.
39	Government should take Nigerian roads more seriously because there are lots of accidents on our roads. No road network, lots of construction companies abandoned road projects because of government inability to release fund to them
40	Driver should always obey traffic laws
41	Drivers should be careful and also follow traffic rules
42	The government should build more bus stops and fix a standard rate for different routes
43	Government should enlighten the commuters and drivers
44	Drivers should learn to obey traffic rules
45	Precaution and safety measures
46	The driver should be more careful and should obey traffic laws at all time
47	Government should improve on road accessibility
48	They should construct more good roads and provide more buses at an affordable rate that can convey people to their destinations

49	They should ensure that traffic officers are always there to perform their duties
LAGOS	
50	There's need for improvement
51	Law enforcement agencies should endeavour to sensitize
52	Public transporters on the need to adhere strictly to all policies and standards of road transport
53	There is urgent need for CCTV on the road
54	The government should empower the public and private sector and create awareness
55	More improvement
56	Try harder
57	Government should work on the roads
58	Nigerian government should elect leaders with fear of God into the politics instead of politicians claiming and acting to be the leaders while selecting themselves leading to failure
59	Government interest in the conventional buses should be sold to private investors but monitored and regulated by the government as it is too much for the government to handle
60	Government should enforce policies, legislations and standards to govern road transport operations in Nigeria
61	Improve standard
62	Proper implementation of road traffic rules and policies should be enforced, training should be given to all public transport owners or drivers in order to enforce changes in our public transport system
63	Government should constitute a monitoring team that will ensure the efficiency of policies
64	Government should do something about the people of NURTW because they are the problem of the people in Nigeria
65	The government should improve on road transport rules and regulations and development of standards in Nigeria at large
66	Maintenance of the vehicles
67	Overcrowding of passengers in the vehicle
68	Awareness should be created on how to make use of the road signs and bus stops
69	The previous roads should be completed and not abandoned
70	The Nigerian government should give a facelift to this ailing transport sector
71	Every public transport driver should have an identification card and number, their records should be put down to avoid wrong did
72	Government should amend the road and enlighten drivers on

	proper use of road
73	Government should improve on public transport drivers and how to maintain traffic signs on the road
74	Government should put a favourable standard to the drivers and the masses to improve public transport. I'm pleading with the government to put an eye on the roads, it will do a lot of good
75	Drivers should always be retrained
76	The roads should be put in good shape
77	Intercity roads should be repaired. Many of the roads are very bad, e.g Ibadan Lagos road, Ilesa-Akure road etc.
UGHELLI	
78	There should be modern infrastructure in our parks, vehicles should be new, roads should be well tared and most importantly drivers should be well trained to deliver good services to the people
79	Improve on security, if possible each vehicle should have a security personnel in it
80	The government should control the price level of transport fare
81	Traffic signs should be mounted on every road
82	Roads should be improved upon, emergency clinics or hospitals should be put on highways. Signs of dangers should be put on some distance to spots that are bad
83	Government should wake up to their responsibilities by upholding to their policies, legislations and standards towards a better establishment of transportation in Nigeria
84	Our roads should be maintained always for safe driving
85	More roads should be constructed to link all towns if possible. The quality of our roads should be improved upon
86	Road transport in Nigeria should be like those obtainable in Europe and America
87	Apply all road safety policies
88	Government policies, standard and legislations should be adequately implemented
89	The roads should be repaired and potholes fixed
90	Government should support the public with vehicles to private owners for effective running system
91	Government should try to maintain our roads to avoid accidents. Drivers who disobey traffic rules should be dealt with
92	Make more improvement on the road public transport system Government should repair road to standard
93	I want the government to eliminate okada (motorcycle) from Ughelli and bring tricycles instead, because okada is too

	expensive
94	The roads should be repaired
95	Traffic lights should be on the roads to control traffic and help pedestrians to cross
96	The roads should be repaired, and heavy duty vehicles should have their own lanes.
97	Some of the motor parks and vehicle are clean and some are dirty, some of the vehicles carry overload
98	Okada is being used because there are no taxis
99	The public transport system is getting worse in addition to the hike in fuel prices
100	Unconstructed roads should be constructed
101	Construction of good road
102	Train drivers to drive carefully
103	Traffic lights should be installed on roads
104	Roads should be maintained regularly and potholes filled up
105	Drivers should be lectured and trained regularly
106	The drivers and the conductors should try to be polite to their customers
107	Drivers should try to avoid overloading of passengers in vehicle
108	Drivers should try to put their vehicle mechanically and electrically up to date
109	Federal road safety corps should be out and plain to punish defaulters of road regulations and be serious with their duties and not only be concerned with fines
110	Be efficient and reliable for more better offers to the public
BENIN	
112	Public awareness on personnel safety as well as public transport user. Legislative should swing into implementation of laws for road offence
113	The only means of transport
114	The price and standard of taxi/buses should be stated and enforced
115	They should improve road transport in the area of good vehicles plying the road in other to avoid frequent accidents
116	Create awareness of policies, legislations and standards
117	The federal government should adequately improve on road transport to enhance easy transportation
118	The government should sit up so as to focus on road maintenance in Nigeria
119	They should educate many of the public transport drivers because many don’t know how to respect their passengers and they should

	tell them to be good examples to the passengers
120	More improvement
121	They should improve
122	They should improve more in order to reduce road accidents
123	The government should establish policies, legislations and standards so that the road public transport will move to the greatest height, so that we will look like the foreign country
124	Nigerian government should sit up
125	There should be good policies, legislations and standards from the government

NUMBER	COMPLAINTS AND SUGGESTIONS
WARRI	**RAIL TRANSPORT**
1	Rail transport staffs should undergo refresher training to enable them discharge their duties more effectively and professionally
2	Improve services
3	There should be enough manpower in the area of cleaning especially the rest rooms
4	Government please try and rehabilitate our rail transportation in this country
5	Let government go for more modern trains instead of using out-dated locomotives
LAGOS	
6	The railway system has to be activated to global standards
7	There's almost collapse of the rail transport system. Total overall to meet modern and global standards. Not the Locomotive type
8	The government should learn from India and china on how to run rail transport system
9	Proper management of the system and avoidance of corruption and enforcement of policies
10	Government should improve the services of rail transport by providing all they need
11	The railways should be well maintained
UGHELLI	
12	Government should reactivate rail transport in Nigeria as among the major means of transportation in Nigeria. So as to bring its awareness to the populace
13	More railways should be constructed
14	The federal government should endeavour to improve and create more railway transport in the 36 states in Nigeria

NUMBER	COMPLAINTS AND SUGGESTIONS
WARRI	**AIR TRANSPORT**
1	Government should improve on security in the Airports
2	Check out for boko haram (security)
3	Regular inspection of aircrafts
4	Improvements in policies, legislations and standards
5	All embarking and disembarking passengers should be well searched for security purposes
6	Put more concentration
7	Should be improved
LAGOS	
7	More maintenance of aircrafts
8	Only modern aircraft should be used and routine maintenance duly enforced as well as observance of highest standards
9	The government needs to improve aviation infrastructure in order to enable airlines operate more profitably
10	More improvements
11	Good maintenance of the engines
12	Proper checking of planes before flying
13	Air transport fare should be subsidized by government
14	Government should improve on the policy governing the airlines
15	Former aviation minister started a good work, though she couldn't continue because of corruption, there should be continuity
16	Policies and legislations should be strictly implemented
UGHELLI	
17	Air transport should be changed for a better tomorrow since it's the major mode of international transportation with regards to its policies, legislations and standards
18	Air transport fare should be made affordable and available in every local government Headquarters
19	Government should ensure aircraft are sound before allowing them to fly

	COMPLAINTS AND SUGGESTIONS
WARRI	**WATER TRANSPORT**
1	Government should open up the waterways e.g. Clear the grasses in the water for easy movement of boats
2	No tickets/ payments are made in the boats
3	Security should be improved
4	Need more armed security personnel at the waterways 24hours
5	The authority concerned should provide more boats for patrol team to enhance effective security on our water ways
6	Security to be more strengthened because of threats in the Niger delta areas
7	The sea ports should be renovated to attract investors
8	Policies, Legislations and standards need review
9	Government should carry out inspections on boats and ships more especially passenger boats
10	For good visibility waterways should be free from grass
11	They should compel every boat driver to have life vests in their boat and make it compulsory for all passengers to put it on
12	Government should provide government owned boat for transport
13	There should be security personnel at all time at the waterways
14	Government should reduce the price of diesel with at least 20%
15	There should be good roads leading to wharfs to make them more accessible
16	Water transport should be improved and awareness should be created
LAGOS	
1	Government should make ferry/boats readily available and also encourage the populace to use water transport so as to decongest the roads
2	There should be a high level of safety standard
3	Should improve
4	The government should enact policies to attract investment into water transportation
5	Should be more in number
6	This transport scheme should be embrace very well like other transport system, if there are policies to this scheme, it should be effective and efficient, proper management and above all avoid corrupt practices in the system
7	Improvements are needed
8	Government should invest on infrastructure

9	More improvements
10	Government should improve the standards
11	Policies should be strictly implemented
UGHELLI	
12	Reduction in transport fare
13	Effective monitoring of the transport system
14	Government should encourage its policies, legislations and standards, since it's the major means of conveying bulky goods in Nigeria
15	Government should build more wharfs and maintain existing ones
16	Improve on facilities
17	Government should supply more boats
18	Create more awareness and improve the infrastructural facilities
BENIN	
19	Both the government and private sector should invest more on water transport because of some Nigerians living in riverine areas who need comfort in area of water transport

APPENDIX 4: QUESTIONNAIRES

UNIVERSITY OF WOLVERHAMPTON
KNOWLEDGE • INNOVATION • ENTERPRISE

NIGERIAN NATIONAL TRANSPORT SURVEY 2014/2015

The aim of this survey is to seek national transport users' views on transport operations in Nigeria. This survey is part of a research being carried out in order to develop a performance enhancement tool for the Nigerian transport sector.

Your response will be kept confidential and will contribute to the development of the Nigerian transport systems, infrastructure and policy.

If you have any questions please do not hesitate to contact Joyce Onatere via email: joyce.onatere@wlv.ac.uk

Thank you very much for your time and co-operation in completing this survey.

RESPONDENT PROFILE

Please fill in your details and tick ( ) the appropriate box, should there be need to give you a feedback on the survey and also acknowledge your support.

Name of Respondent: .....

Address:……

City/Town:…… **State:**……..

Phone no:…… **Email:**……..

How long have you been living in your Area of residence?

☐Permanent resident ☐Less than a year ☐1-5 years ☐5-10 years ☐More than 10 years

Gender

☐Male ☐Female

Age range

☐20-25 ☐26-30 ☐31-35 ☐36-40 ☐41-45 ☐46-5 ☐51-55 ☐56-60 ☐61-65 ☐66-70

Work Status

☐Employed ☐Unemployed ☐Student ☐Business ☐Retired ☐Other……

SECTION 1: ROAD TRANSPORT

This part of the questionnaire attempts to acquire your views and experience on Nigerian road transport.

SECTION 1.1: FREQUENCY OF TRAVEL

How often do you use road transport?

Please tick ( ) the appropriate box

☐Rarely ☐Daily ☐Weekly ☐Monthly ☐A few times a year

What is the most frequent purpose of your trip?

Please tick ( ) the appropriate box

☐Work ☐School ☐Business ☐Shopping ☐Leisure ☐Don't know/Not applicable ☐Other……..

How do you travel?

Please tick ( ) the appropriate box

☐Public transport (i.e. public buses, public motorcycles, tricycles etc.)

☐Private transport (i.e. you prefer using your own private vehicle)

If you prefer using private transport please go to section 1.2.

If you prefer using public transport please go to section 1.3.

SECTION 1.2: PRIVATE TRANSPORT USERS

1.2.1. CHOICE TO USE PRIVATE TRANSPORT

Why do you prefer using your own private vehicle?

Please tick ( ) the appropriate box

☐Cheaper ☐More convenient ☐Quicker ☐Safer ☐More secure ☐Enjoy travelling in my private vehicle ☐No reason ☐Other……

SECTION 1.3: PUBLIC TRANSPORT USERS

1.3.1. CHOICE TO USE PUBLIC TRANSPORT

Why do you prefer public transport?

Please tick ( ) the appropriate box

☐Cheaper ☐ More convenient ☐ Quicker ☐Safer ☐More secure ☐ No traffic worries ☐No parking worries ☐No other choice/alternative ☐Enjoy travelling with

public transport ☐ No reason ☐ Other……

1.3.2. PREFERRED MODE OF TRAVEL

Mode of public transport you prefer the most

Please tick ( ) the appropriate box

☐Conventional Buses (BRT/long/big buses) ☐Mini buses ☐Taxis ☐Tricycles (Kekenapep) ☐Motorcycles (Okada)

1.3.3. ACCESS TO MOTOR PARKS/BUS STATIONS

How do you normally get to the motor parks/bus stations/stops?

Please tick ( ) the appropriate box

☐Foot ☐Bicycle ☐Car/Van ☐Car/Van rental ☐Taxi ☐Motorcycle ☐Bus ☐Other…….

1.3.4. TICKETS

What type of ticket do you normally purchase?

Please tick ( ) the appropriate box

☐Per journey ☐Weekly ☐Monthly ☐Annual ☐Other……

Where do you normally purchase your ticket?

Please tick ( ) the appropriate box

☐Driver ☐Motor park/Bus stop ☐Ticket office ☐Online ☐Other…….

How would you rate the ticketing systems in the following areas?

Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Self service							
Ticket office							
Number of ticket booths							
Efficiency of ticketing staff							
Attitude of ticketing staff							
Information provided by ticketing staff							

1.3.5. MOTOR PARKS/BUS STATIONS/STOPS

How would you rate the motor parks/bus stations/stops in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of motor parks/bus stop							
Signage (easy to understand / clear and helpful)							
Provision of information about service changes							
Available assistance/Customer services							
Toilet facilities							
Refreshment facilities							
Waiting rooms							
Personal security in the motor parks/bus stop							
Easy and accessible complaint handling and mechanism put in place							
Facilities for car parking							
Responses to emergency							
Ease of connections with other modes of public transport							
Assistance and information for disabled or elderly people at motor parks/bus stop							

Accessibility of motor parks/bus stops							
Personal safety in the motor parks/bus stops							

1.3.6. VEHICLES

How would you rate public transport vehicles in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of Vehicles							
Comfort of seating space							
Punctuality of vehicles (arrival and departure)							
Temperature On-board							
On-board facilities							
Reliability of vehicles							
Frequency of vehicles							
Travel time							
Assistance and information for disabled or elderly people onboard the vehicles							
Accessibility of vehicles							
Personal safety onboard							
Personal security onboard							
Journey comfort (smoothness of ride)							
Personal security during evening/night							
Accessibility during evening/night							

1.3.7. TRANSPORT FARE

What is your perception of your cost of using public transport?
Please Rate public transport cost/fare according to modes

Please tick ( ) in the appropriate column

Modes	Cheap	Affordable	Expensive	Very Expensive	No comment
Conventional Buses (BRT/Long/big buses)					
Mini buses					
Tricycles (Kekenapep)					
Motorcycles (Okada)					
Taxis					

1.3.8. BEHAVIOUR OF DRIVERS AND CONDUCTORS

How is the behavior of drivers and conductors?
Please tick ( ) the appropriate box
☐Polite ☐Rude ☐Some are polite and some are rude ☐Abusive

1.3.9. DRIVING

How would you rate the driving of the drivers?
Please tick ( ) in the appropriate column. The rating scale is as follows: Very careful = 5; Careful = 4; Neutral = 3; Reckless = 2; Very reckless = 1.

	Very careful	Careful	Neutral	Reckless	Very reckless	No comment
	5	4	3	2	1	
Driving of public transport drivers						

1.3.10. FOLLOWING OF TRAFFIC RULES BY DRIVERS

Do drivers follow traffic rules?

☐Yes ☐No

If Yes how often?
Please tick ( ) the appropriate box
☐Follow traffic rules every time ☐Follow traffic rules sometimes
☐Follow traffic rules depending on presence of traffic officers

1.3.11. PERCEPTION ON STOPS

Should drivers stop wherever you tell them to stop even if it's against the law?

☐Yes ☐No

If Yes please give your reason below by ticking ( ) the appropriate box or state it:

☐Yes, I pay for the service ☐Well, sometimes they can if there is no traffic

☐Since they pick from anywhere they should stop anywhere as well

☐Other……..

1.3.12. RECOGNITION OF ROUTES

How easy is it for you to recognize and find the transport going on your route?

Please tick ( ) the appropriate box

☐Very easy ☐Easy ☐Difficult ☐Very difficult

☐It was difficult in the beginning, now it's easy

1.3.13. PERCEPTION ON SAFETY BASED ON MODE OF TRAVEL

Rate the safety of road public transport according to mode

Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very Safe = 5; Safe = 4; Neutral = 3; Unsafe = 2; Very Unsafe = 1.

Mode	**Very Safe**	**Safe**	**Neutral**	**Unsafe**	**Very Unsafe**	**No comment**
	5	**4**	**3**	**2**	**1**	
Conventional Buses						
Mini buses						
Tricycles (Kekenapep)						
Motorcycles (Okada)						
Taxis						

1.3.14. RELIABILITY OF ROAD PUBLIC TRANSPORT

How reliable is road public transport for your daily travel?

Please tick ( ) in the appropriate column. The rating scale is as follows: Very reliable = 5; Reliable = 4; Neutral = 3; Unreliable = 2; Very Unreliable = 1.

	Very reliable	**Reliable**	**Neutral**	**Unreliable**	**Very unreliable**	**No comment**
	5	**4**	**3**	**2**	**1**	
Reliability of road public transport						

1.3.15. OVERALL EXPERIENCE

How would rate your overall experience so far with road public transport?

Please tick ( ) in the appropriate column. The rating scale is as follows: Very pleasant = 5; Pleasant = 4; Neutral = 3; Unpleasant = 2; Very Unpleasant = 1.

	Very Pleasant	**Pleasant**	**Neutral**	**Unpleasant**	**Very unpleasant**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall experience with road public transport						

1.3.16. OVERALL SATISFACTION

Overall how satisfied are you with road public transport services?

Please tick ( ) in the appropriate column. The rating scale is as follows: Very satisfied = 5; Satisfied = 4; Neutral = 3; Unsatisfied = 2; Very Unsatisfied = 1.

	Very Satisfied	**Satisfied**	**Neutral**	**Unsatisfied**	**Very unsatisfied**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall satisfaction with road public transport						

1.3.17. LEVEL OF IMPROVEMENT

Compared with 12 months ago, would you say public transport services are……

Please tick ( ) in the appropriate box.

☐Much better now ☐Better now ☐Not changed ☐Worse now ☐Much worse now

☐Did not use public transport 12 months ago ☐Don't know ☐Other……

1.3.18. POLICIES, LEGISLATIONS AND STANDARDS

Are you aware of government POLICIES, LEGISLATIONS and/or STANDARDS governing road transport operations in Nigeria?

Please tick ( ) in the appropriate box.

POLICIES ☐Yes ☐No ☐Don't exist
LEGISLATIONS ☐Yes ☐No ☐Don't exist
STANDARDS ☐Yes ☐No ☐Don't exist

If your response is YES to any or all of the above, please go to 1.3.18.1.

If your response is NO to any or all of the above, please go to 1.3.18.2.

If your response is DON'T EXIST to any or all of the above, please go to 1.3.18.3.

1.3.18.1. Since your response is YES to any or all of 1.3.18, how would you rate the impact they have on transport development and operation in Nigeria?

The rating scale is as follows: Very good= 5; Good= 4; Neutral= 3; Poor= 2; Very Poor= 1. On the other hand if you don't know just tick in the column.

	Very good	**Good**	**Neutral**	**Poor**	**Very poor**	**Don't know**
	5	**4**	**3**	**2**	**1**	
POLICIES						
LEGISLATIONS						
STANDARDS						

1.3.18.2. Since your response is NO to any or all of 1.3.18, do you think the government should create awareness on any or all of them?
Please tick ( ) the appropriate box

POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

1.3.18.3. Since your response is DON'T EXIST to any or all of 1.3.18, do you think the government should establish any or all of them?
Please tick ( ) the appropriate box

POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

1.3.19. SUGGESTIONS

Do you have any suggestions regarding road public transport?.....

SECTION 2: RAIL TRANSPORT

This part of the questionnaire attempts to acquire your views and experience on Nigerian rail transport.

SECTION 2.1: FREQUENCY OF TRAVEL

How often do you use rail transport (i.e. travel by train?)

Please tick ( ) the appropriate box

☐Rarely ☐Daily ☐Weekly ☐Monthly ☐A few times a year

☐Never used rail transport in Nigeria (i.e. You have never travelled by train in Nigeria).

If you have never used rail transport in Nigeria please go to section 2.2.

Rail transport users please go to section 2.3.

SECTION 2.2: NEVER USED RAIL TRANSPORT IN NIGERIA

What is your reason for not using rail transport?

Please tick ( ) the appropriate box

☐There are no Rail transport services in my area ☐Too expensive ☐Not safe

☐Not secure ☐No reason ☐Other……

SECTION 2.3: RAIL TRANSPORT USERS

2.3.1. CHOICE TO USE RAIL TRANSPORT

Why do you choose rail transport?

Please tick ( ) the appropriate box

☐Cheaper ☐More convenient ☐Quicker ☐Safer ☐More secure ☐No traffic worries

☐No parking worries ☐No other choice/alternative ☐Enjoy travelling by trains

☐No reason ☐Other……

What is the most frequent purpose of your rail trip?

Please tick ( ) the appropriate box

☐Work ☐School ☐Business ☐Shopping ☐Leisure

☐Don't know/Not applicable ☐Other……

How do you normally get to the train station?

Please tick ( ) the appropriate box

☐Foot ☐Bicycle ☐Car/Van ☐Car/Van rental ☐Taxi ☐Motorcycle

☐Bus ☐Other……..

Please indicate the cabin class you usually travel in.

Please tick ( ) the appropriate box

☐First class ☐Economy

2.3.2. TICKETS

What type of ticket do you normally purchase?

Please tick ( ) the appropriate box

☐Per journey ☐Weekly ☐Monthly ☐Annual ☐Other……

Where do you normally purchase your ticket?

Please tick ( ) the appropriate box

☐Ticket office ☐Onboard the train ☐Online ☐Vending machine ☐Other……

How would you rate the ticketing systems in the following areas?

Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Self service							
Ticket office							
Number of ticket booths							
Efficiency of ticketing staff							
Attitude of ticketing staff							
Information provided by ticketing staff							

2.3.3. PLATFORMS AND STATIONS

How would you rate the railway stations and platforms in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of train station							
Signage (easy to understand / clear and helpful)							
Provision of information about train schedules and platforms							
Available assistance/Customer services							
Toilet facilities							
Refreshment facilities							
Waiting rooms							
Personal security in the station							
Easy and accessible complaint handling and mechanism put in place							
Facilities for car parking							
Responses to emergency							
Reliability of escalators/elevators at stations							
Ease of connections with other modes of public transport							
Ease of connections with other train services							
Assistance and information for disabled or elderly people in station							
Accessibility of station							
Personal safety in the station							

2.3.4. TRAINS

How would you rate the trains in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good 5	**Good** 4	**Neutral** 3	**Poor** 2	**Very Poor** 1	**Not available**	**No comment**
Cleanliness and maintenance of trains							
Comfort of seating space							
Punctuality of trains (arrival and departure)							
Temperature On-board							
Storage facilities							
On-board information							
On-board facilities							
Reliability of trains							
Frequency of trains							
Travel time: Length of time the journey was scheduled to take (commercial speed/the travelling speed of trains)							
Assistance and information for disabled or elderly people onboard the train							
Accessibility of trains							
Availability of staff in trains							
Personal safety onboard							
Personal security onboard							
Journey comfort (smoothness of ride)							

2.3.5. TRANSPORT FARE

What is your perception about Rail transport cost/fare?
Please tick ( ) the appropriate box
Rail transport fare is…….
☐Cheap ☐Affordable ☐Expensive ☐Very expensive

2.3.6. RELIABILITY OF RAIL TRANSPORT

How reliable is rail transport for your daily travel?

Please tick ( ) in the appropriate column. The rating scale is as follows: Very reliable = 5; Reliable = 4; Neutral = 3; Unreliable = 2; Very Unreliable = 1.

	Very reliable	**Reliable**	**Neutral**	**Unreliable**	**Very unreliable**	**No comment**
	5	**4**	**3**	**2**	**1**	
Reliability of Rail transport						

2.3.7. OVERALL EXPERIENCE

How would you rate your overall experience so far with rail transport?

Please tick ( ) in the appropriate column. The rating scale is as follows: Very pleasant = 5; Pleasant = 4; Neutral = 3; Unpleasant = 2; Very Unpleasant = 1.

	Very Pleasant	**Pleasant**	**Neutral**	**Unpleasant**	**Very unpleasant**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall experience with rail transport						

2.3.8. OVERALL SATISFACTION

Overall how satisfied are you with the services being provided in rail transport?

Please tick ( ) in the appropriate column. The rating scale is as follows: Very satisfied = 5; Satisfied = 4; Neutral = 3; Unsatisfied = 2; Very Unsatisfied = 1.

	Very Satisfied	**Satisfied**	**Neutral**	**Unsatisfied**	**Very unsatisfied**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall satisfaction with rail transport						

2.3.9. LEVEL OF IMPROVEMENT

Compared with 12 months ago, would you say Rail transport services are……

Please tick ( ) in the appropriate box.

☐Much better now ☐Better now ☐Not changed

☐Worse now ☐Much worse now ☐Did not use the rail transport12 months ago

☐Don't know ☐Other……

2.3.10. POLICIES, LEGISLATIONS AND STANDARDS

Are you aware of government POLICIES, LEGISLATIONS and/or STANDARDS governing rail transport operations in Nigeria?

Please tick ( ) in the appropriate box.

POLICIES ☐Yes ☐No ☐Don't exist
LEGISLATIONS ☐Yes ☐No ☐Don't exist
STANDARDS ☐Yes ☐No ☐Don't exist

If your response is YES to any or all of the above, please go to 2.3.10.1.

If your response is NO to any or all of the above, please go to 2.3.10.2.

If your response is DON'T EXIST to any or all of the above, please go to 2.3.10.3.

2.3.10.1. Since your response is YES to any or all of 2.3.10, how would you rate the impact they have on transport development and operation in Nigeria?

The rating scale is as follows: Very good= 5; Good= 4; Neutral= 3; Poor= 2; Very Poor= 1. On the other hand if you don't know just tick in the column.

	Very good	**Good**	**Neutral**	**Poor**	**Very poor**	**Don't know**
	5	**4**	**3**	**2**	**1**	
POLICIES						
LEGISLATIONS						
STANDARDS						

2.3.10.2. Since your response is NO to any or all of 2.3.10, do you think the government should create awareness on any or all of them?

Please tick ( ) the appropriate box

POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

2.3.10.3. Since your response is DON'T EXIST to any or all of 2.3.10, do you think the government should establish any or all of them?

Please tick ( ) the appropriate box

POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

2.3.11. SUGGESTIONS

Do you have any suggestion regarding rail transport?.....

SECTION 3: AIR TRANSPORT

This part of the questionnaire attempts to acquire your views and experience on Nigerian air transport.

SECTION 3.1: FREQUENCY OF TRAVEL

How often do you travel by Air?

Please tick ( ) the appropriate box

☐Rarely ☐Daily ☐Weekly ☐Monthly ☐A few times a year ☐Never travelled by Air

If you travel by Air, how do you travel?

Please tick ( ) the appropriate box

☐Public transport (i.e. public aircraft)

☐Private transport (i.e. you prefer using your own private jet/aircraft)

If you have never travelled by Air in Nigeria please go to section 3.2.

If you prefer using your own private aircraft please go to section 3.3.

Air public transport users please go to section 3.4.

SECTION 3.2: NEVER TRAVELLED BY AIR IN NIGERIA

What is your reason for not using Air transport?

Please tick ( ) the appropriate box

☐There are no Air transport services in my area ☐Too expensive ☐Not safe

☐Not secure ☐No reason ☐Other……

SECTION 3.3: PRIVATE AIRCRAFT USERS

3.1. CHOICE TO USE PRIVATE TRANSPORT

Why do you prefer using your own private Jet/aircraft?

Please tick ( ) the appropriate box

☐Cheaper ☐More convenient ☐Quicker ☐Safer ☐More secure

☐Enjoy travelling in my private Jet ☐No reason ☐Other……

SECTION 3.4: AIR PUBLIC TRANSPORT USERS

3.4.1. CHOICE TO USE AIR TRANSPORT

Why do you choose Air transport?

Please tick ( ) the appropriate box

☐Cheaper ☐More convenient ☐Quicker ☐Safer ☐More secure ☐No traffic worries ☐No parking worries ☐No other choice/alternative ☐Enjoy travelling by Air
☐No reason ☐Other……..

What is the most frequent purpose of your air trip?
Please tick ( ) the appropriate box
☐Work ☐School ☐Business ☐Shopping ☐Leisure
☐Don't know/Not applicable ☐Other……

How do you normally get to the airport?
Please tick ( ) the appropriate box
☐Foot ☐Bicycle ☐Car/Van ☐Car/Van rental ☐Taxi ☐Motorcycle
☐Bus ☐Other……..

Please indicate the cabin class you usually fly.
Please tick ( ) the appropriate box
☐First class ☐Business class ☐Economy class

3.4.2. TICKETS

Where do you normally purchase your ticket?
Please tick ( ) the appropriate box
☐Airline sales office ☐Company travel department ☐Airline desk at airport
☐Travel agent ☐Airline website ☐Online travel agents ☐Others……

How would you rate the ticketing system in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Self service							
Ticket office							
Number of ticket booths							
Efficiency of ticketing staff							
Attitude of ticketing staff							
Information							

provided by ticketing staff							

3.4.3. AIRPORTS

How would you rate the airports in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of airports							
Signage (easy to understand / clear and helpful)							
Provision of information about flight schedules							
Available assistance/Customer services							
Toilet facilities							
Refreshment facilities							
Waiting rooms							
Personal security in the airports							
Easy and accessible complaint handling and mechanism put in place							
Facilities for car parking							
Responses to emergency							
Reliability of escalators/elevators at airports							
Ease of connections with other modes of public transport							
Assistance and information for disabled or elderly people in airports							
Accessibility of airports							
Personal safety in the airports							
Security control waiting and processing times							

Luggage handling							
Baggage waiting time							

3.4.4. AIRCRAFTS

How would you rate the aircrafts in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of aircrafts							
Comfort of seating space							
Punctuality of aircrafts (arrival and departure)							
Temperature On-board							
Storage facilities							
On-board information							
On-board facilities							
Reliability of aircraft							
Frequency of aircraft							
Travel time							
Accessibility of aircraft							
Helpfulness of staff on-board							
Personal safety onboard							
Personal security onboard							
Journey comfort (smoothness of flight)							

3.4.5. TRANSPORT FARE

What is your perception about Air transport fare?
Please tick ( ) the appropriate box
Air transport fare is…….
☐Cheap ☐Affordable ☐Expensive ☐Very expensive

3.4.6. RELIABILITY OF AIR TRANSPORT

How reliable is Air transport for your daily travel?

Please tick ( ) in the appropriate column. The rating scale is as follows: Very reliable = 5; Reliable = 4; Neutral = 3; Unreliable = 2; Very Unreliable = 1.

	Very reliable	**Reliable**	**Neutral**	**Unreliable**	**Very unreliable**	**No comment**
	5	**4**	**3**	**2**	**1**	
Reliability of Air transport						

3.4.7. OVERALL EXPERIENCE

How would you rate your overall experience so far with Air transport?
Please tick ( ) in the appropriate column. The rating scale is as follows: Very pleasant = 5; Pleasant = 4; Neutral = 3; Unpleasant = 2; Very Unpleasant = 1.

	Very Pleasant	**Pleasant**	**Neutral**	**Unpleasant**	**Very unpleasant**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall experience with Air transport						

3.4.8. OVERALL SATISFACTION

Overall how satisfied are you with Air transport services?
Please tick ( ) in the appropriate column. The rating scale is as follows: Very satisfied = 5; Satisfied = 4; Neutral = 3; Unsatisfied = 2; Very Unsatisfied = 1.

	Very Satisfied	**Satisfied**	**Neutral**	**Unsatisfied**	**Very unsatisfied**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall satisfaction with Air transport						

3.4.9. LEVEL OF IMPROVEMENT

Compared with 12 months ago, would you say Air transport services are……
Please tick ( ) in the appropriate box.

☐Much better now ☐Better now ☐Not changed ☐Worse now ☐Much worse now

☐Did not use air transport 12 months ago ☐ Don't know ☐Other……

3.4.10. POLICIES, LEGISLATIONS AND STANDARDS

Are you aware of government POLICIES, LEGISLATIONS and/or STANDARDS governing air transport operations in Nigeria?

Please tick ( ) in the appropriate box.

POLICIES ☐Yes ☐No ☐Don't exist
LEGISLATIONS ☐Yes ☐No ☐Don't exist
STANDARDS ☐Yes ☐No ☐Don't exist

If your response is YES to any or all of the above, please go to 3.4.10.1.

If your response is NO to any or all of the above, please go to 3.4.10.2.

If your response is DON'T EXIST to any or all of the above, please go to 3.4.10.3.

3.4.10.1. Since your response is YES to any or all of 3.4.10, how would you rate the impact they have on transport development and operation in Nigeria?

The rating scale is as follows: Very good= 5; Good= 4; Neutral= 3; Poor= 2; Very Poor= 1. On the other hand if you don't know just tick in the column.

	Very good	**Good**	**Neutral**	**Poor**	**Very poor**	**Don't know**
	5	**4**	**3**	**2**	**1**	
POLICIES						
LEGISLATIONS						
STANDARDS						

3.4.10.2. Since your response is NO to any or all of 3.4.10, do you think the government should create awareness on any or all of them?

Please tick ( ) the appropriate box

POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

3.4.10.3. Since your response is DON'T EXIST to any or all of 3.4.10, do you think the government should establish any or all of them?

Please tick ( ) the appropriate box
POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

3.4.11. SUGGESTIONS

Do you have any suggestion regarding air transport?.....

SECTION 4: WATER TRANSPORT

This part of the questionnaire attempts to acquire your views and experience on Nigerian water transport.

SECTION 4.1: FREQUENCY OF TRAVEL

How often do you use Water transport?

Please tick ( ) the appropriate box

☐Rarely ☐Daily ☐Weekly ☐Monthly ☐A few times a year

☐Never used Water transport in Nigeria (i.e. You have never travelled by ferry/boat/ship in Nigeria).

If you have never used water transport in Nigeria please go to section 4.2.

Water transport users please go to section 4.3.

SECTION 4.2: NEVER USED WATER TRANSPORT IN NIGERIA

What is your reason for not using water transport?

Please tick ( ) the appropriate box

☐There are no water transport services in my area ☐Too expensive ☐Not safe

☐Not secure ☐No reason ☐Other……

SECTION 4.3: WATER TRANSPORT USERS

4.3.1. CHOICE TO USE WATER TRANSPORT

Why do you choose water transport?

Please tick ( ) the appropriate box

☐Cheaper ☐More convenient ☐Quicker ☐Safer ☐More secure ☐No traffic worries

☐No parking worries ☐No other choice/alternative ☐Enjoy travelling by ferry/boat

☐No reason ☐Other……

What is the most frequent purpose of your ferry/boat trip?

Please tick ( ) the appropriate box

☐Work ☐School ☐Business ☐Shopping ☐Leisure

☐Don't know/Not applicable ☐Other……..

How do you normally get to the Wharf?

Please tick ( ) the appropriate box

☐Foot ☐Bicycle ☐Car/Van ☐Car/Van rental ☐Taxi ☐Motorcycle

☐Bus ☐Other…….

4.3.2. TICKETS

What type of ticket do you normally purchase?
Please tick ( ) the appropriate box
☐Per journey ☐Weekly ☐Monthly ☐Annual ☐Other…….

Where do you normally purchase your ticket?
Please tick ( ) the appropriate box
☐Ticket office ☐Onboard the boat ☐Online ☐Vending machine ☐Other……

How would you rate the ticketing systems in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Self service							
Ticket office							
Number of ticket booths							
Efficiency of ticketing staff							
Attitude of ticketing staff							
Information provided by ticketing staff							

4.3.3. FERRIES/BOATS

How would you rate the Ferries/Boats in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of ferry/boat/ships							
Accessibility of ferry/boat/ships							
Punctuality of ferry/boat/ships (arrival and departure)							
Frequency of ferry/boat/ships							
Comfort of seating space							
Temperature onboard							
Personal safety onboard							
Personal security onboard							
Travel time							
Onboard facilities							
Helpfulness of staff onboard							
Onboard information							
Reliability of ferry/boat/ship							
Signage (easy to understand/clear and helpful)							
Journey comfort (smoothness of ride)							

4.3.4. WHARFS

How would you rate the wharfs in the following areas?
Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of wharf							
Signage (easy to understand/clear and helpful)							
Personal safety at wharf							
Personal security at wharf							
Comfort at wharf (shelter and seating)							
Availability of car parking near the wharf							
Ease of connection with other modes of public transport							
Being informed of service changes (e.g. delays)							
Available assistance/customer services							
Accessibility of wharf							

4.3.5. TRANSPORT FARE

What is your perception about Water transport fare?
Please tick ( ) the appropriate box
Water transport fare is…….
☐Cheap ☐Affordable ☐Expensive ☐Very expensive.

4.3.6. RELIABILITY OF WATER TRANSPORT

How reliable is Water transport for your daily travel?
Please tick ( ) in the appropriate column. The rating scale is as follows: Very reliable = 5; Reliable = 4; Neutral = 3; Unreliable = 2; Very Unreliable = 1.

	Very reliable	**Reliable**	**Neutral**	**Unreliable**	**Very unreliable**	**No comment**
	5	**4**	**3**	**2**	**1**	
Reliability of Water transport						

4.3.7. OVERALL EXPERIENCE

How would you rate your overall experience so far with water transport?
Please tick ( ) in the appropriate column. The rating scale is as follows: Very pleasant = 5; Pleasant = 4; Neutral = 3; Unpleasant = 2; Very Unpleasant = 1.

	Very Pleasant	**Pleasant**	**Neutral**	**Unpleasant**	**Very unpleasant**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall experience with Water transport						

4.3.8. OVERALL SATISFACTION

Overall how satisfied are you with Water transport services?
Please tick ( ) in the appropriate column. The rating scale is as follows: Very satisfied = 5; Satisfied = 4; Neutral = 3; Unsatisfied = 2; Very Unsatisfied = 1.

	Very Satisfied	**Satisfied**	**Neutral**	**Unsatisfied**	**Very unsatisfied**	**No comment**
	5	**4**	**3**	**2**	**1**	
Overall satisfaction with Water transport						

4.3.9. LEVEL OF IMPROVEMENT

Compared with 12 months ago, would you say water transport services are……
Please tick ( ) in the appropriate box.

☐Much better now ☐Better now ☐Not changed ☐Worse now ☐Much worse now

☐Did not use water transport 12 months ago ☐Don't know ☐Other……

4.3.10. POLICIES, LEGISLATIONS AND STANDARDS

Are you aware of government POLICIES, LEGISLATIONS and/or STANDARDS governing water transport operations in Nigeria?

Please tick ( ) in the appropriate box.

POLICIES ☐Yes ☐No ☐Don't exist
LEGISLATIONS ☐Yes ☐No ☐Don't exist
STANDARDS ☐Yes ☐No ☐Don't exist

If your response is YES to any or all of the above, please go to 4.3.10.1.

If your response is NO to any or all of the above, please go to 4.3.10.2.

If your response is DON'T EXIST to any or all of the above, please go to 4.3.10.3.

4.3.10.1. Since your response is YES to any or all of 4.3.10, how would you rate the impact they have on transport development and operation in Nigeria?

The rating scale is as follows: Very good= 5; Good= 4; Neutral= 3; Poor= 2; Very Poor= 1. On the other hand if you don't know just tick in the column.

	Very good	**Good**	**Neutral**	**Poor**	**Very poor**	**Don't know**
	5	**4**	**3**	**2**	**1**	
POLICIES						
LEGISLATIONS						
STANDARDS						

4.3.10.2. Since your response is NO to any or all of 4.3.10, do you think the government should create awareness on any or all of them?

Please tick ( ) the appropriate box

POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

4.3.10.3. Since your response is DON'T EXIST to any or all of 4.3.10, do you think the government should establish any or all of them?

Please tick ( ) the appropriate box

POLICIES ☐Yes ☐No
LEGISLATIONS ☐Yes ☐No
STANDARDS ☐Yes ☐No

4.3.11. SUGGESTIONS

Do you have any suggestion regarding Water transport?.....

The part of the survey the Benchmarking was focused on

ROAD TRANSPORT

TICKETS

How would you rate the ticketing systems in the following areas?

Please attempt all questions by ticking ( ) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Self service							
Ticket office							
Number of ticket booths							
Efficiency of ticketing staff							
Attitude of ticketing staff							
Information provided by ticketing staff							

MOTOR PARKS/BUS STATIONS/STOPS

How would you rate the motor parks/bus stations/stops in the following areas?

Please attempt all questions by ticking (✔) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of motor parks/bus stop							
Signage (easy to understand / clear and helpful)							
Provision of information about service changes							
Available assistance/Customer services							
Toilet facilities							
Refreshment facilities							
Waiting rooms							
Personal security in the motor parks/bus stop							
Easy and accessible complaint handling and mechanism put in place							
Facilities for car parking							
Responses to emergency							
Ease of connections with other modes of public transport							
Assistance and information for disabled or elderly people at motor parks/bus stop							
Accessibility of motor parks/bus stops							
Personal safety in the motor parks/bus stops							

VEHICLES

How would you rate public transport vehicles in the following areas?

Please attempt all questions by ticking (✔) in the appropriate column. The rating scale is as follows: Very good = 5; Good = 4; Neutral = 3; Poor = 2; Very Poor = 1. On the other hand if the service is not available or you have no comments just tick in the columns.

	Very good	**Good**	**Neutral**	**Poor**	**Very Poor**	**Not available**	**No comment**
	5	**4**	**3**	**2**	**1**		
Cleanliness and maintenance of Vehicles							
Comfort of seating space							
Punctuality of vehicles (arrival and departure)							
Temperature On-board							
On-board facilities							
Reliability of vehicles							
Frequency of vehicles							
Travel time							
Assistance and information for disabled or elderly people onboard the vehicles							
Accessibility of vehicles							
Personal safety onboard							
Personal security onboard							
Journey comfort (smoothness of ride)							
Personal security during evening/night							
Accessibility during evening/night							

UK SURVEY QUESTIONNAIRE

Detailed results

Satisfaction (%)	2011 all satisfied	2012 all satisfied	2013 all satisfied	2014 all satisfied	2014 very satisfied	2014 fairly satisfied	2014 neither /nor	2014 all dissatisfied	2014 base size
THE BUS STOP									
Overall satisfaction with the bus stop	72	79	80	81	33	48	13	6	2064
Its distance from the journey start	-	81	85	85	50	35	11	4	1968
The convenience/accessibility of its location	-	88	87	87	52	35	10	3	1865
Its condition/standard of maintenance	73	69	74	75	33	42	17	9	1878
Its freedom from graffiti/vandalism	74	73	79	78	42	36	14	8	1859
Its freedom from litter	63	64	68	71	33	37	16	14	1854
The information provided at the stop	-	67	72	72	33	39	15	12	1847
Your personal safety whilst at the stop	72	71	75	78	37	41	16	7	1882
ON THE BUS									
Route/destination information on the outside of the bus	82	84	83	84	48	35	12	4	1977
The cleanliness and condition of the outside of the bus	75	76	77	81	39	42	14	5	1960
The ease of getting onto and off the bus	89	89	89	90	54	36	7	3	2052
The length of time it took to board	89	88	89	89	55	34	8	3	2001
The cleanliness and condition of the inside of the bus	70	71	73	76	31	45	13	11	2086
The information provided inside the bus	57	57	61	63	26	37	29	8	1836
The availability of seating or space to stand	84	83	84	85	47	38	9	6	2039
The comfort of the seats	74	72	75	77	36	40	13	10	2052
The amount of personal space you had around you	-	66	73	75	36	40	14	11	2041
Provision of grab rails to stand/move within the bus	82	79	82	83	41	42	12	5	2034
The temperature inside the bus	76	76	77	76	36	40	15	9	2047
Your personal security whilst on the bus	82	81	80	82	41	41	15	3	2043

Link: BUS PASSENGER SURVEY:AUTUMN 2014. Available at http://www.transportfocus.org.uk/research/bus-passenger-satisfaction-survey

APPENDIX 5: LETTER ACCOMPANYING QUESTIONNAIRE

UNIVERSITY OF WOLVERHAMPTON
KNOWLEDGE • INNOVATION • ENTERPRISE

Faculty of Science and Engineering

6th March 2014

Dean:
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TO WHOM IT MAY CONCERN
Transport Users
Transport Operators
Ministries, Departments and Agencies

NIGERIAN NATIONAL TRANSPORT SURVEY 2014/2015
(An International Research Project)

This is to introduce to you Ms Joyce Onatere, who is carrying out an international PhD research project on techniques for accelerating the development of transportation and its infrastructure in Nigeria. Part of her project requires that a Nigerian National Transport Survey is carried out. This study has been designed to enable the necessary knowledge to be gained from a sample of stakeholders, including transport users, operators, Public and Private sector. The data to be acquired in this study will provide enabling knowledge that will assist in the future development of transport systems and infrastructure in Nigeria.

We need your help to make Nigerian transport systems and infrastructure the best it can be. Therefore, kindly provide her with the support and assistance that will enable her secure the information and data that can assist in this very important project.

Your support will be acknowledged in the report to be produced

Thank you

Professor Chris Nwagboso
Director

APPENDIX 6: QUESTIONNAIRE FOR VALIDATION OF THE PROPOSED STRATEGIC ACTION PLAN

I will be very grateful if you can kindly fill out this questionnaire to validate the proposed Strategic Action Plan. Your response will be kept confidential and used for research purposes only. If you have any questions please do not hesitate to contact Joyce Onatere-Ubrurhe via email: joyce.onatere@wlv.ac.uk. Thank you very much for your time and co-operation.

RESPONDENT PROFILE

Please fill in your details should there be need to give you a feedback and also acknowledge your support.

NAME:……..

PHONE NUMBER……..

EMAIL ADDRESS……..

ORGANISATION……

POSITION……

SECURITY

Please indicate your level of agreement with the proposed actions listed below to assist in taking proactive measures against transport Insecurity in Nigeria. Please tick (√) one option. The scale is as follows: Strongly Agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly Disagree = 1.

NO.	NECESSARY ACTIONS	HOW IT WORKS					
			Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1	Increase the presence of well equipped police officers/ security personnel along highways	(1) The presence of security personnel may deter some offenders/robbers (2) Extra security personnel may be able to intervene in situations that result in crime/robbery Extra security personnel may be able to apprehend offenders/robbers					
2	Introduce undercover security officers to apprehend offenders/robbers operating onboard vehicles and at facilities as some criminals board vehicles as passengers and along the way rob people of their valuables	(1) Undercover security officers may be more likely to observe offences and subsequently apprehend offenders/robbers (2) Well-publicised operations may deter some offenders/robbers					
3	Increase natural surveillance through design (design measures should be introduced in areas where incidents concentrated)	(1) Increased natural surveillance may deter some offenders (2) Increased natural surveillance may assist in the response to incidents					

4	Install CCTV in motor parks/bus stations and vehicles	(1) The presence of CCTV may deter some crimes (2) CCTV may assist staff to identify situations to which personnel can be deployed (3) CCTV may assist to identify offenders (4) The presence of CCTV may motivate passengers to protect their valuables					
5	Install passenger alarms, emergency phones and intercoms at motor parks/bus stations and on vehicles	(1) Assists passengers to summon assistance in dangerous situations or notify personnel following incidents (2) Their existence may deter some offenders/robbers					
6	Reduce overcrowding in motor parks/bus stations	(1) Makes thefts more difficult to commit (2) May prevent some disputes due to crowding or jostling					
7	Separate waiting passengers from other members of the public e.g. installing shelters or barriers	Makes it more difficult for offenders to obtain physical proximity to passengers without detection					

Further suggestions

…….

PUBLIC TRANSPORT VEHICLES

Please indicate your level of Agreement with the proposed actions listed below to assist in the improvement of public transport vehicles in Nigeria. Please tick (√) one option. The scale is as follows: Strongly Agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly Disagree = 1.

NO.	NECESSARY ACTIONS	HOW IT WORKS					
			Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
	MAINTENANCE/OPERATION						
1	Develop partnership working with public transport operators to monitor and improve service quality (frequency/punctuality /reliability/integration/air quality/maintenance)	These will give a set of service standards for public transport vehicles in Nigeria which will help drive consistency and quality across the network					
2	Introduce live, real time information on bus location and route planning						
3	Develop high vehicle standards, including the sitting environment, cleanliness and Wi-Fi						
4	Vehicles should be tested annually	(1) This will help check for crashworthiness of vehicles (2) Check how reliable the vehicles are and also help in ensuring proper maintenance of vehicles					
	ACCESSIBILITY/ASSISTANCE FOR DISABLED/ELDERLY						
5	Introduction of Low-floor/Accessible vehicles for the sake of the disabled/elderly	These will help the disabled (especially wheel chair users) easily enter vehicles without struggle					
6	Commercial bus operators need to be encouraged to invest in modern accessible						

	vehicles						
7	Priority seating in the vehicles for the disabled/elderly						
8	Provide free door-door transport service for disabled/elderly people who have difficulties accessing public transport	This will help the disabled get easy access to transport					
9	Commercial bus operators need to be encouraged to invest in appropriate training in customer care for all passengers, particularly elderly and disabled customers, to ensure that they are treated with respect and understanding	This will improve customer service for the disabled/elderly					
10	Provide the best and simplest to use concessionary fares scheme for the disabled/elderly	This will help in reducing transport fare for the disabled/elderly					

Further suggestions……..

MOTOR PARKS/BUS STATIONS/STOPS

Please indicate your level of Agreement with the proposed actions listed below to assist in the improvement of Motor parks/Bus stations/Stops in Nigeria. Please tick (√) one option. The scale is as follows: Strongly Agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly Disagree = 1.

NO.	NECESSARY ACTIONS	HOW IT WORKS					
			Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1	Improve the quality of Motor parks/Bus Station/Bus stops; Customer focused, high quality services, respecting passengers' needs and with responsive customer complaints handling	These will give a set of service standards for public transport in Nigeria which will help drive consistency and quality across the network					
2	Improve publicity materials (timetables/leaflets/maps/bus stop information)						
3	Improve passenger environment (safety/security audits on bus, at bus station/stops)						
4	Develop standards/criteria for bus stops/shelters including parking restrictions						
5	Provide passengers with a waiting environment that is comfortable, secure and provides easy access to vehicles whilst projecting an image of high quality						
6	Bus stops should be built	This will stop drivers from stopping anywhere to pick or drop passengers which most times results in road traffic crashes					

Further suggestions……..

TICKETING AND FARES

Please indicate your level of Agreement with the proposed actions listed below to assist in improvement of Ticketing system and transport fares in Nigeria. Please tick (√) one option. The scale is as follows: Strongly Agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly Disagree = 1.

NO.	NECESSARY ACTIONS	HOW IT WORKS					
			Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1.	Develop a clear, transparent and simple mechanism for fare pricing; which still allows operators to set levels themselves. This could include an upper price limit and some form of banding/zoning	These will enable people to travel flexibly and conveniently, across a range of operators and services					
2	Develop an integrated smart ticketing system that would enable customers to use a single smart ticket, mobile phone or other means of payment, on any bus						
3	Develop return ticketing system	These will create an affordable and easy to use transport system					
4	Developing ticket schemes such as travelcards and smartcards						
5	Develop a transport policy on fares and ticketing where appropriate						
6	Training of staffs	This will help in improving customer service					

Further suggestions……

DRIVERS

Please indicate your level of Agreement with the proposed actions listed below to assist in improvement of Public transport Drivers' behaviour in Nigeria. Please tick (√) one option. The scale is as follows: Strongly Agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly Disagree = 1.

NO.	NECESSARY ACTIONS	HOW IT WORKS					
			Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1.	Qualification standards should be set for drivers	These will prompt drivers to train properly and desist from drinking and smoking which has contributed a lot to road traffic crashes in Nigeria and also improve their relationship with passengers					
2.	Drivers should be made to undergo drugs and alcohol test						

Further suggestions…….

ANNUAL SURVEYS

Please indicate your level of agreement with carrying out annual transport surveys. Please tick (√) one option. The scale is as follows: Strongly Agree = 5; Agree = 4; Neutral = 3; Disagree = 2; Strongly Disagree = 1.

NO.	NECESSARY ACTIONS	HOW IT WORKS					
			Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
1.	National Transport Survey should be carried out annually	(1) This will help in monitoring the progress/improvements of the transport sector (2) This will create awareness on Policies, Legislations and Standards governing transport operations in Nigeria					

Further suggestions……..